# Appendix A
# RF Test Data for BT(BDR/EDR) (Conducted Measurement)

**Product Name: Wireless Patio Speaker**

**Trade Mark: OSD AUDIO**

**Test Model: BTP650**

**FCC ID: 2A4UH-BTP650**

## Environmental Conditions

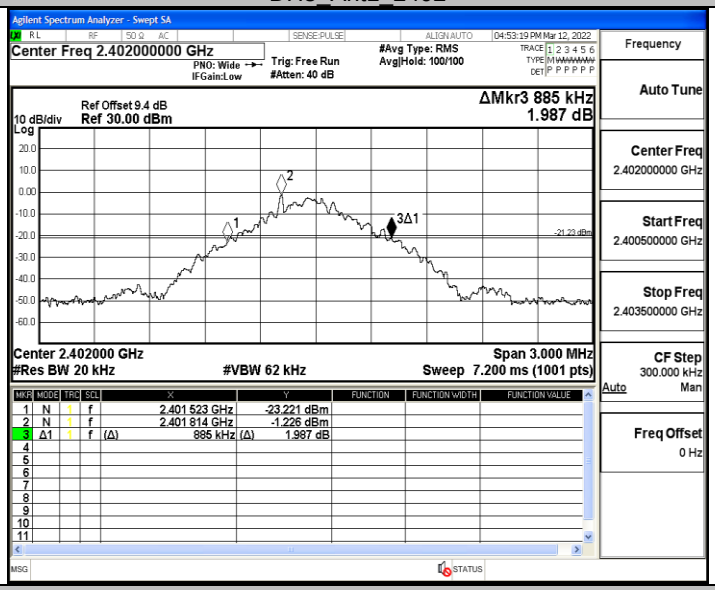
| | |
|---|---|
| Temperature: | 22.8° C |
| Relative Humidity: | 56% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Nancy Li |
| Supervised by: | Hugo Chen |

### A.1 20 dB Bandwidth

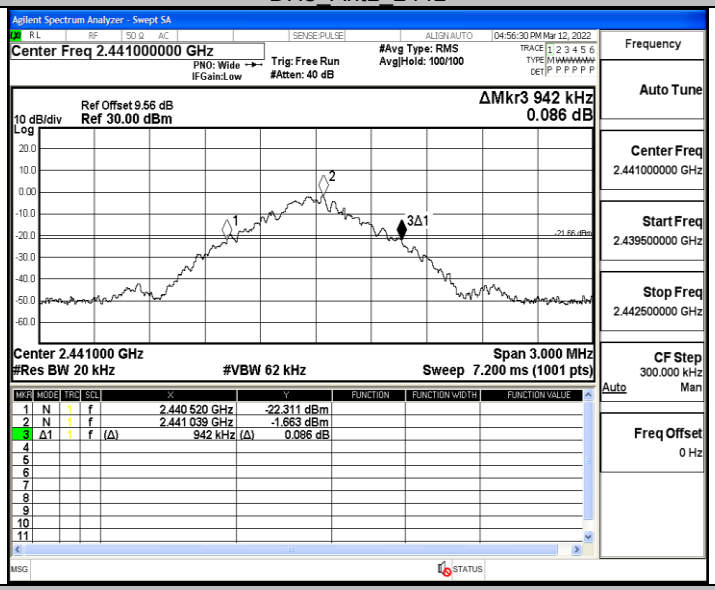
| TestMode | Antenna | Channel | 20db EBW[MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | 2402 | 0.885 | 2401.523 | 2402.408 | --- | --- |
| | | 2441 | 0.942 | 2440.520 | 2441.462 | --- | --- |
| | | 2480 | 0.945 | 2479.520 | 2480.465 | --- | --- |
| 2DH5 | Ant1 | 2402 | 1.338 | 2401.313 | 2402.651 | --- | --- |
| | | 2441 | 1.329 | 2440.316 | 2441.645 | --- | --- |
| | | 2480 | 1.296 | 2479.325 | 2480.621 | --- | --- |
| 3DH5 | Ant1 | 2402 | 1.284 | 2401.334 | 2402.618 | --- | --- |
| | | 2441 | 1.278 | 2440.334 | 2441.612 | --- | --- |
| | | 2480 | 1.344 | 2479.310 | 2480.654 | --- | --- |

## Test Graph

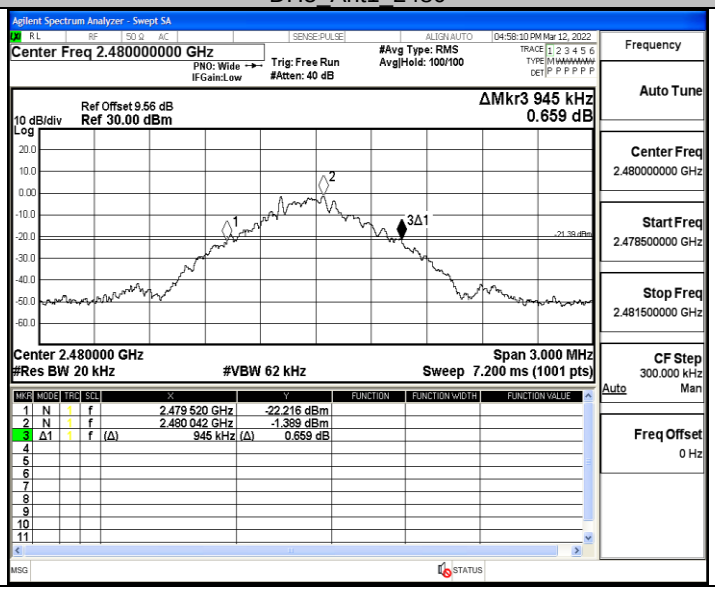
DH5_Ant1_2402



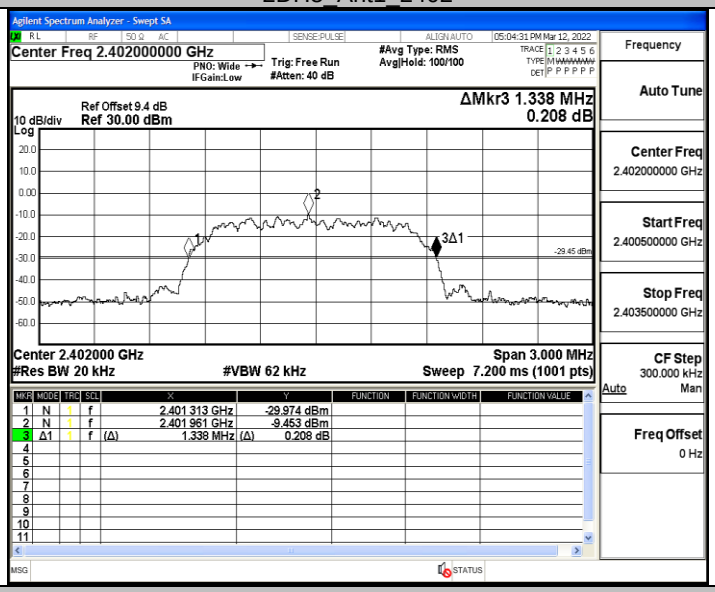

DH5_Ant1_2441



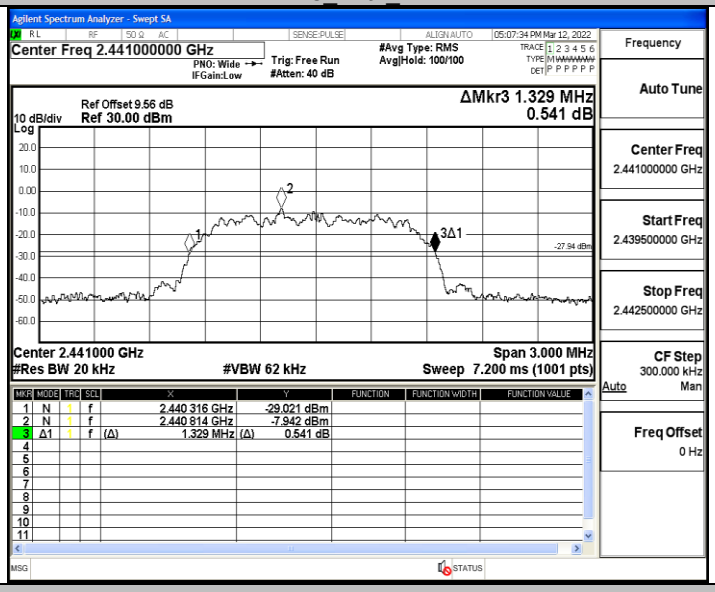

DH5_Ant1_2480



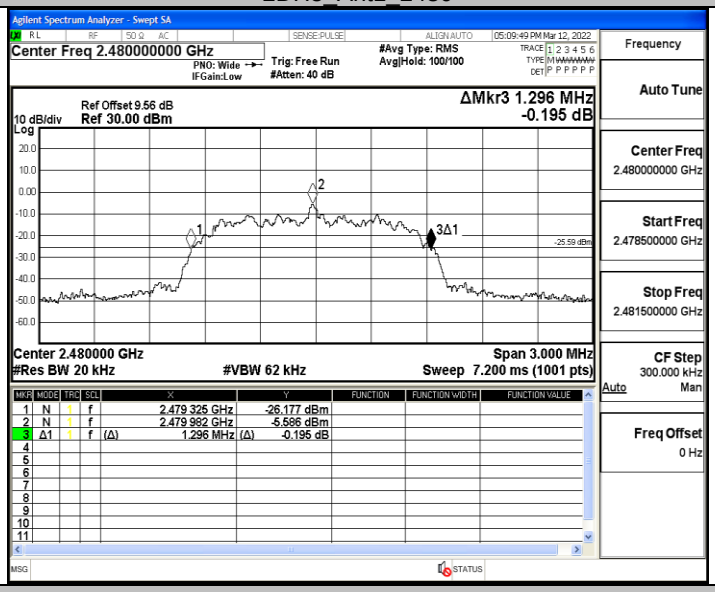
2DH5_Ant1_2402



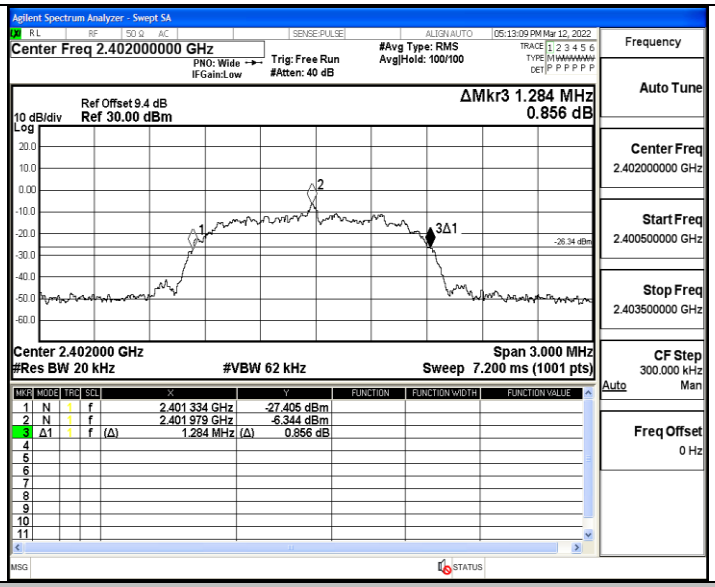

2DH5_Ant1_2441



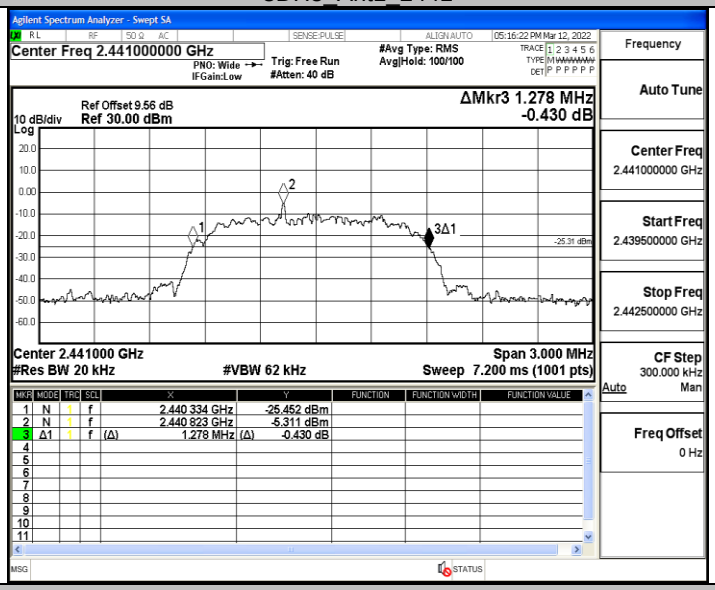

2DH5_Ant1_2480



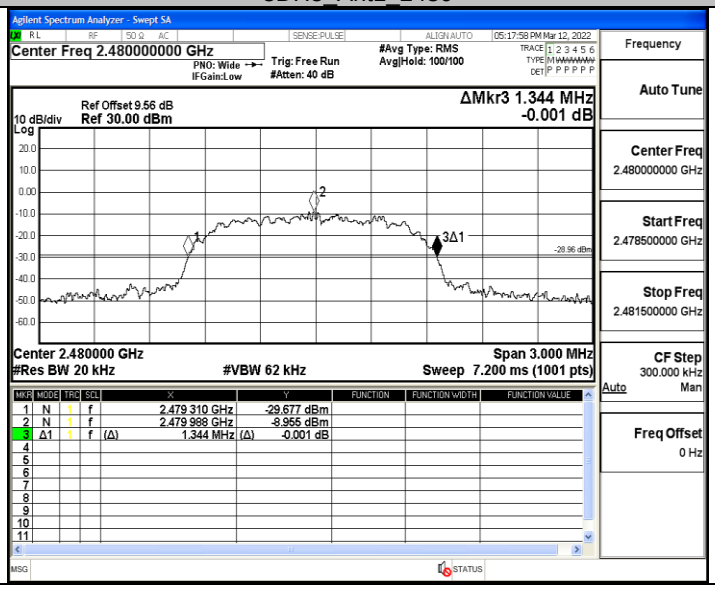

3DH5_Ant1_2402




3DH5_Ant1_2441




3DH5_Ant1_2480

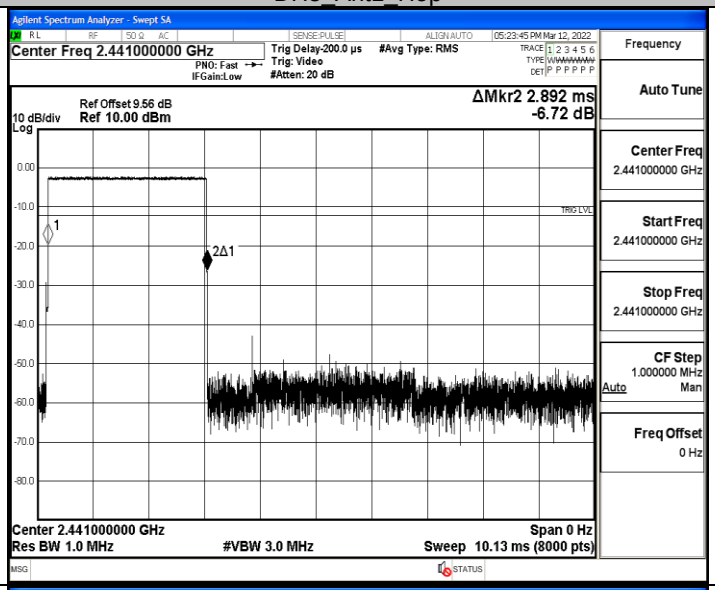


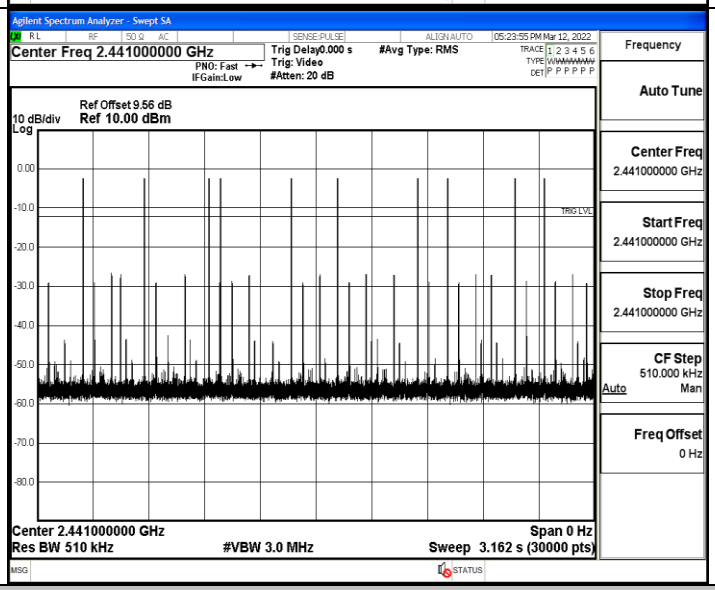
## A.2 Dwell Time

| TestMode | Antenna | Channel | BurstWidth [ms] | TotalHops [Num] | Result[s] | Limit[s] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | Hop | 2.89 | 110 | 0.318 | ≤0.4 | PASS |
| 2DH5 | Ant1 | Hop | 2.88 | 110 | 0.317 | ≤0.4 | PASS |
| 3DH5 | Ant1 | Hop | 2.88 | 120 | 0.346 | ≤0.4 | PASS |

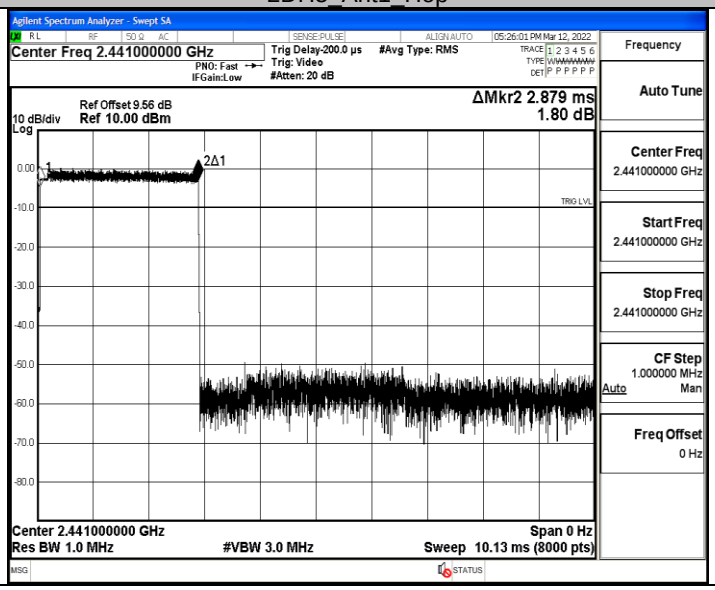
## Test Graph

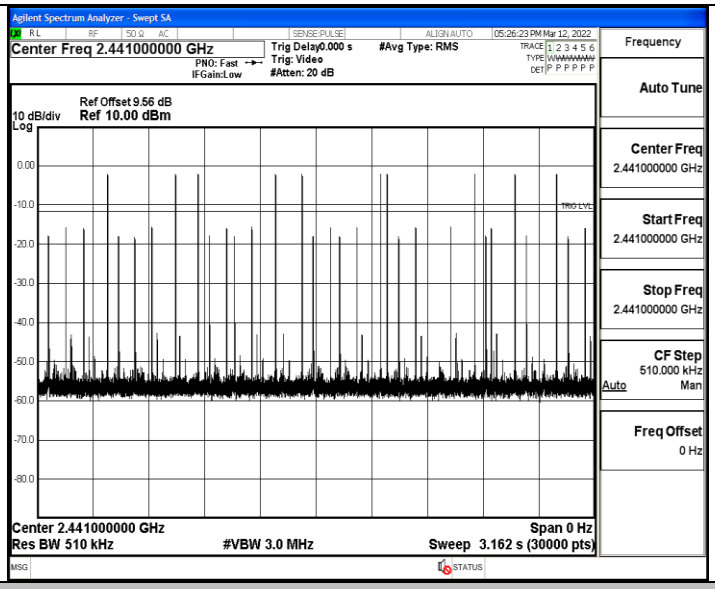
DH5_Ant1_Hop



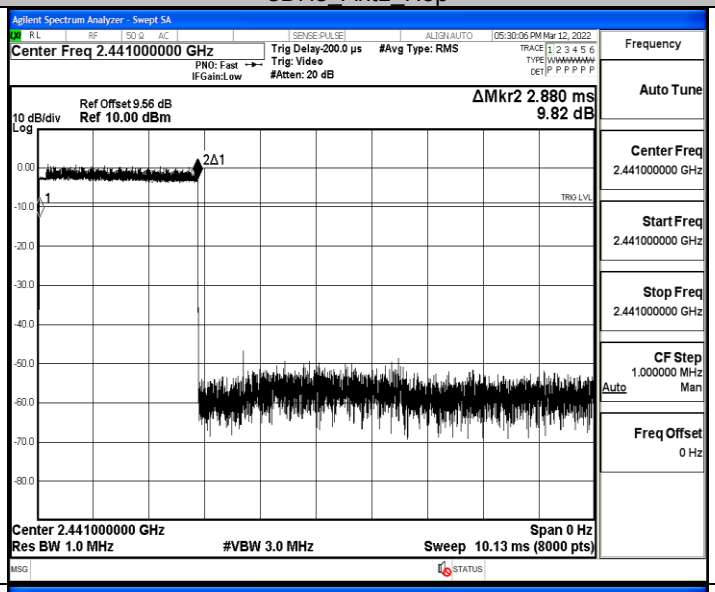



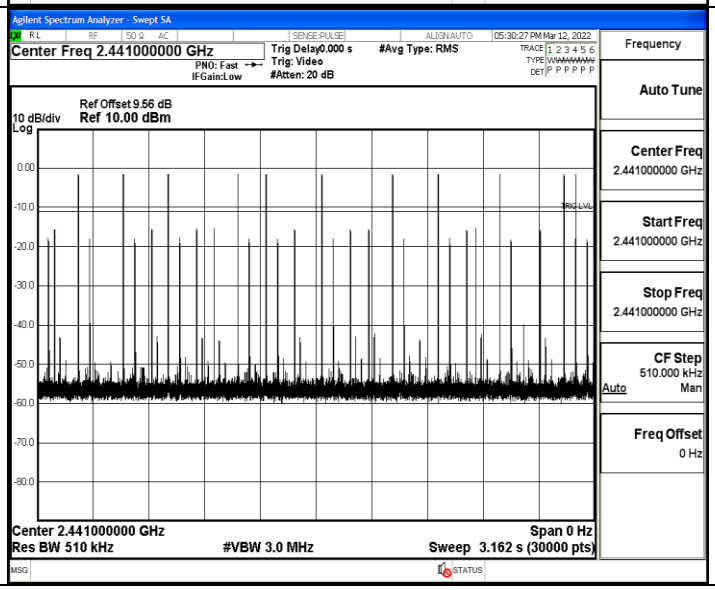

2DH5_Ant1_Hop






3DH5_Ant1_Hop



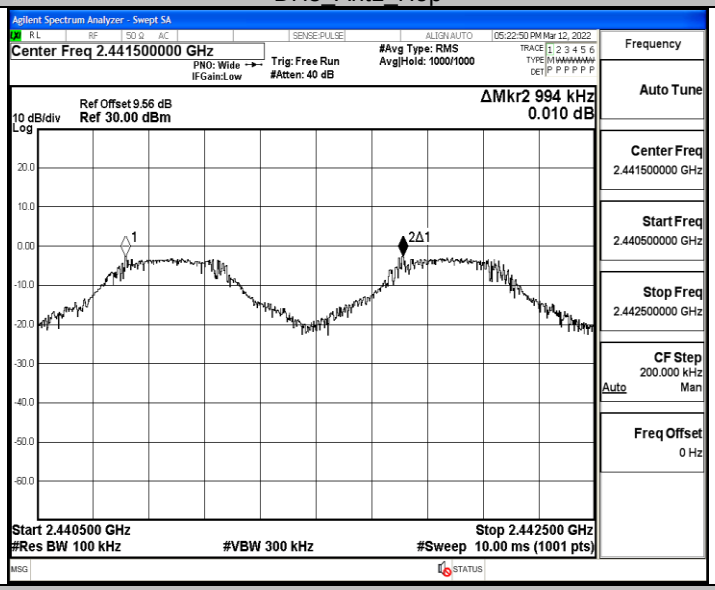



## A.3 Carrier Frequency Separation

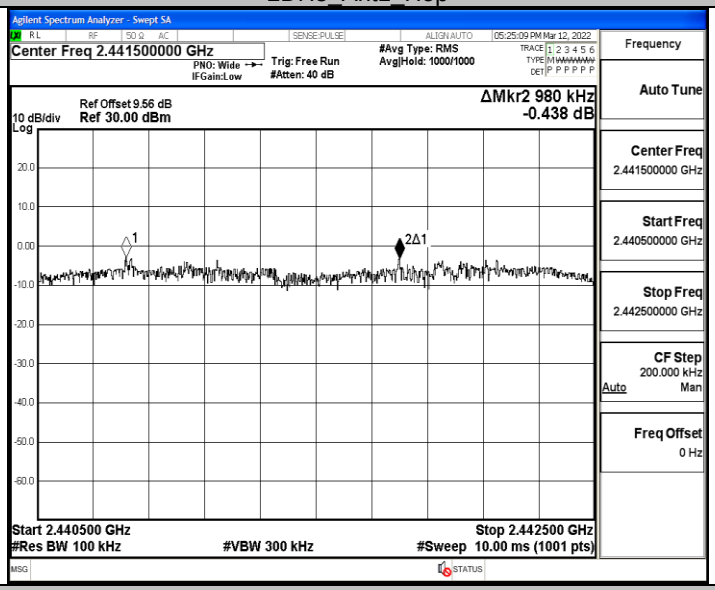
| TestMode | Antenna | Channel | Result[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | Hop | 0.994 | ≥0.945 | PASS |
| 2DH5 | Ant1 | Hop | 0.98 | ≥0.892 | PASS |
| 3DH5 | Ant1 | Hop | 1.326 | ≥0.896 | PASS |

## Test Graph

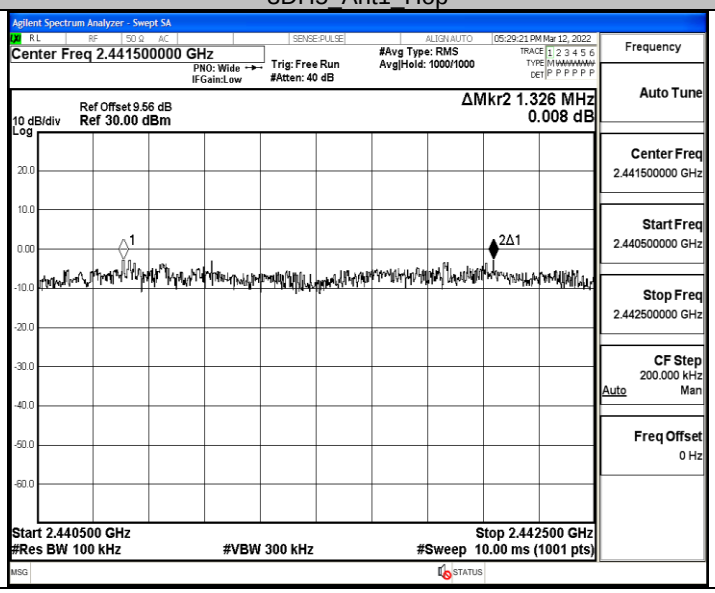
DH5_Ant1_Hop




2DH5_Ant1_Hop




3DH5_Ant1_Hop

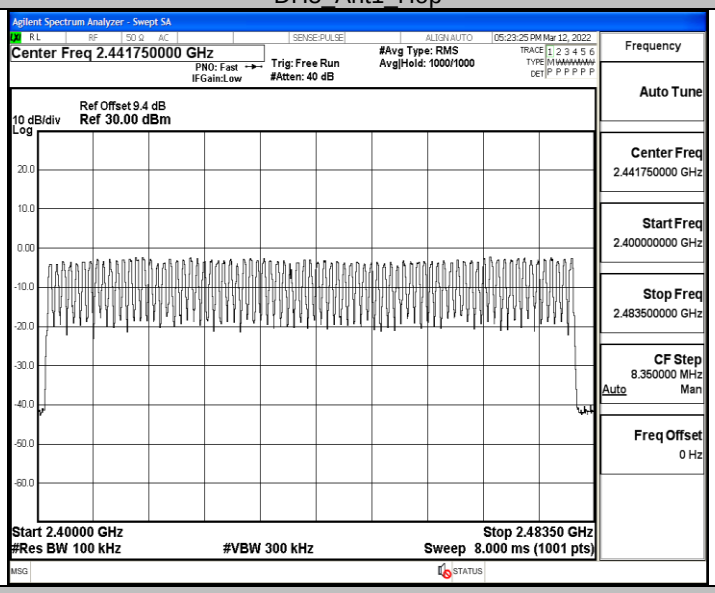


## A.4 Hopping Channel Number

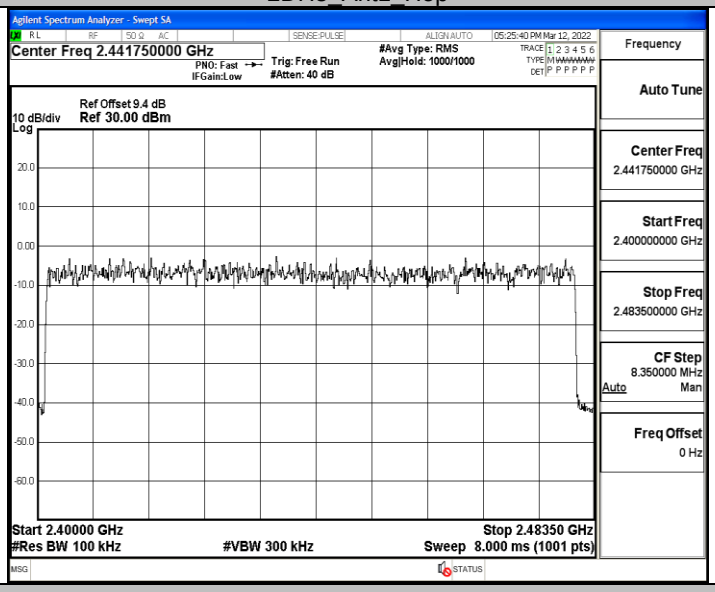
| TestMode | Antenna | Channel | Result[Num] | Limit[Num] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | Hop | 79 | ≥15 | PASS |
| 2DH5 | Ant1 | Hop | 79 | ≥15 | PASS |
| 3DH5 | Ant1 | Hop | 79 | ≥15 | PASS |

### Test Graph

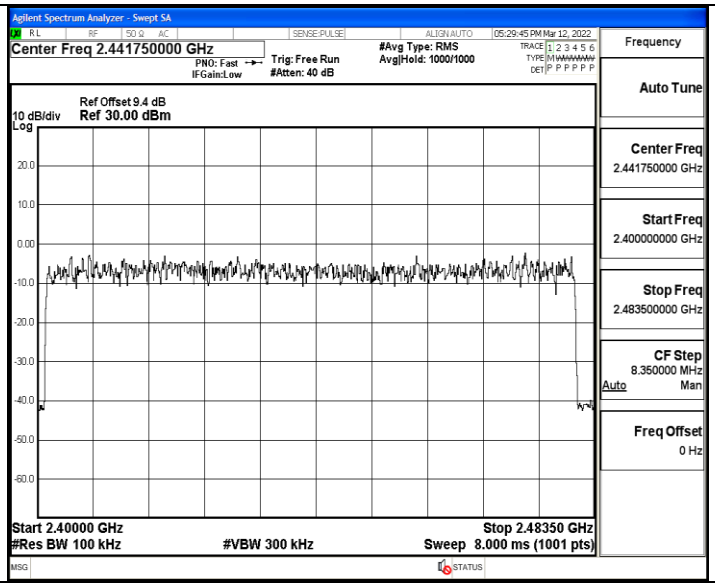
DH5_Ant1_Hop




2DH5_Ant1_Hop




3DH5_Ant1_Hop

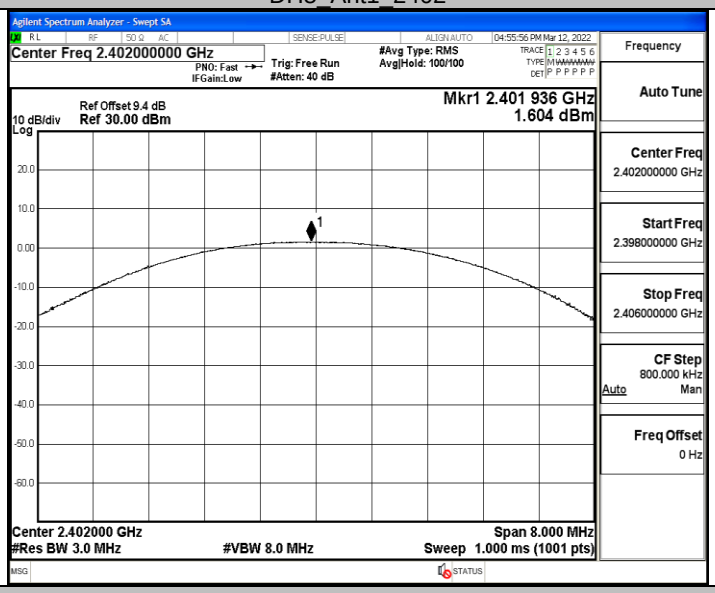

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 1000/1000
05:29:45 PM Mar 12, 2022
Ref Offset 9.4 dB
10 dB/div
Ref 30.00 dBm
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto
Man
Freq Offset
0 Hz

## A.5 Conducted Peak Output Power

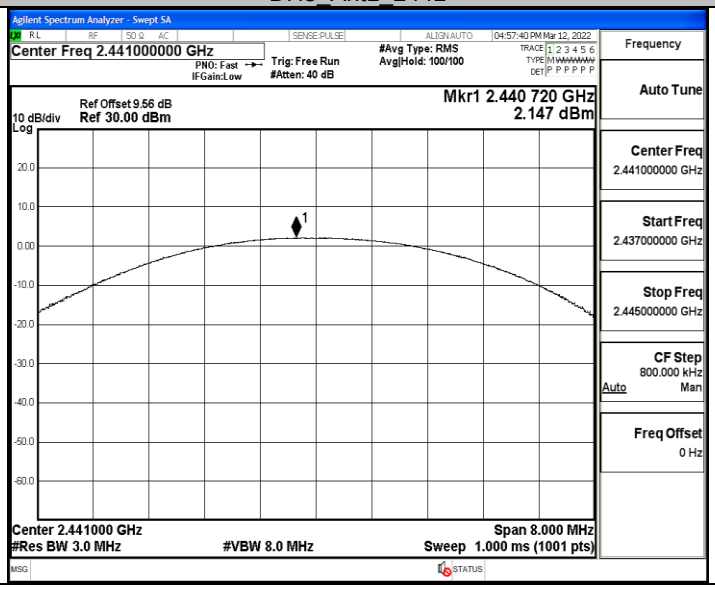
| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | 2402 | 1.6 | ≤20.97 | PASS |
| | | 2441 | 2.15 | ≤20.97 | PASS |
| | | 2480 | 2.47 | ≤20.97 | PASS |
| 2DH5 | Ant1 | 2402 | 0.27 | ≤20.97 | PASS |
| | | 2441 | 0.73 | ≤20.97 | PASS |
| | | 2480 | 1.09 | ≤20.97 | PASS |
| 3DH5 | Ant1 | 2402 | 0.86 | ≤20.97 | PASS |
| | | 2441 | 1.49 | ≤20.97 | PASS |
| | | 2480 | 1.75 | ≤20.97 | PASS |

### Test Graph

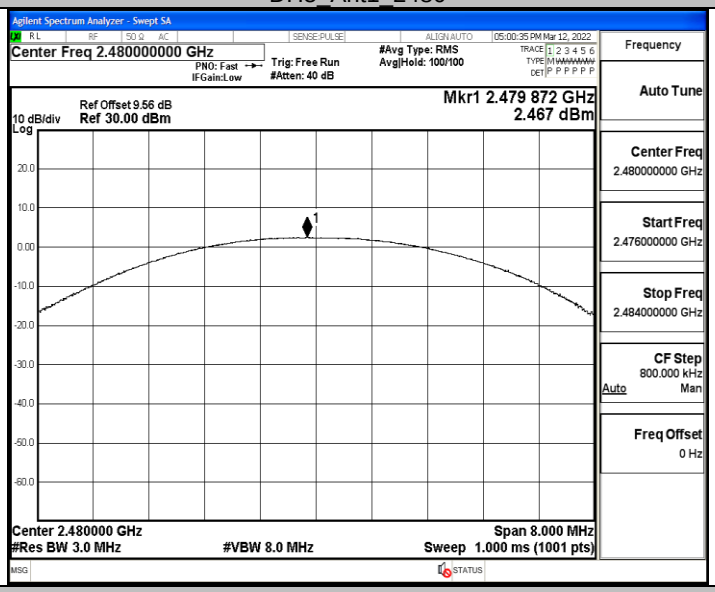
DH5_Ant1_2402



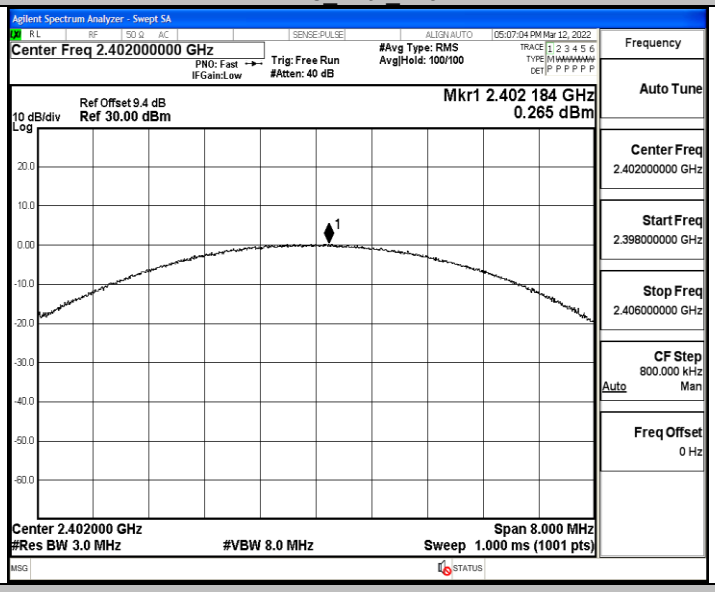

DH5_Ant1_2441



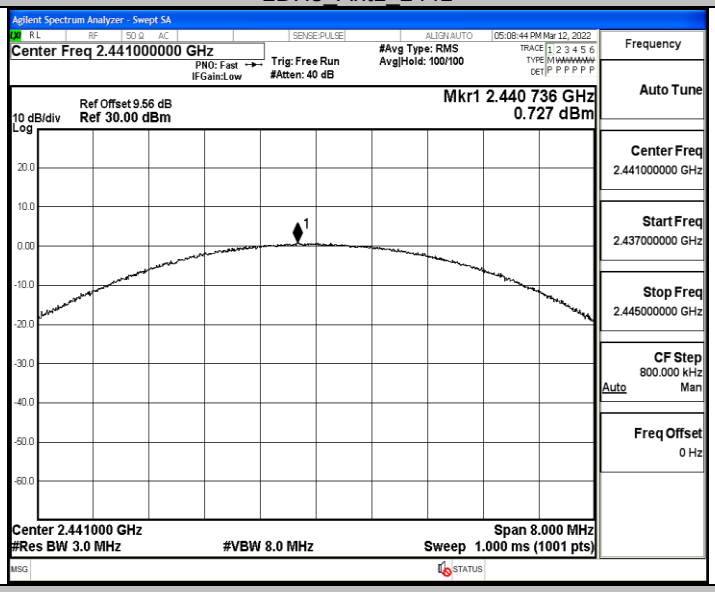
DH5_Ant1_2480



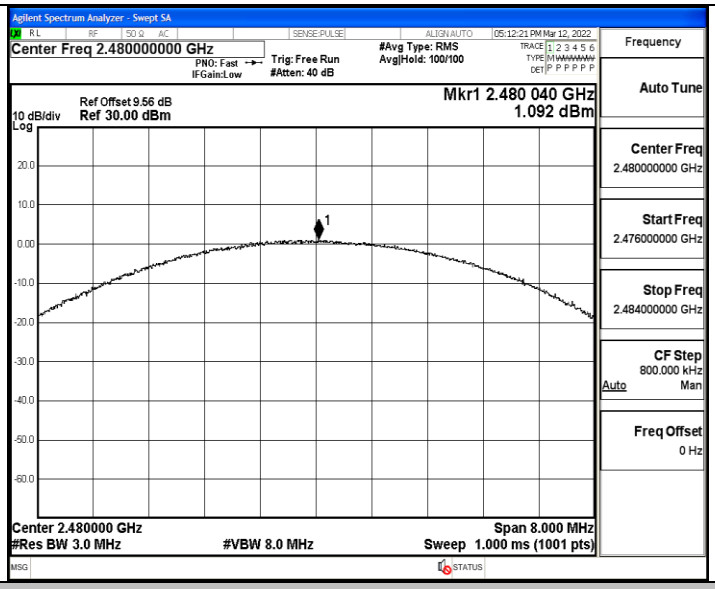

2DH5_Ant1_2402



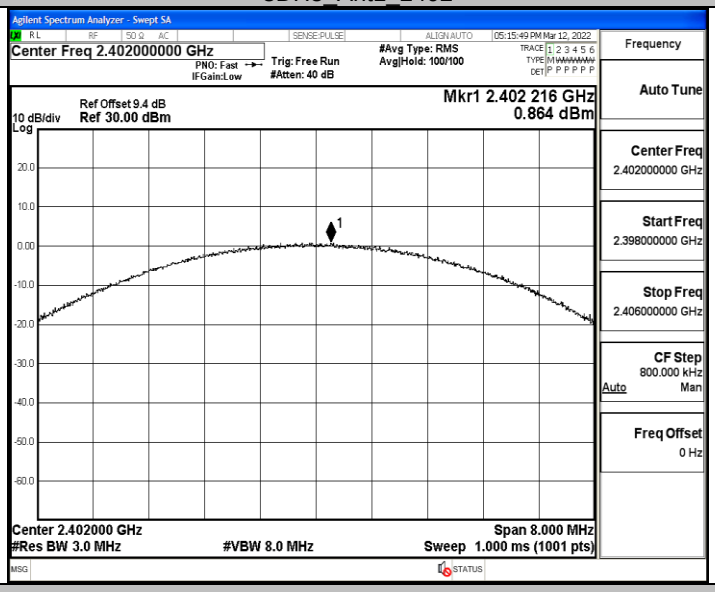

2DH5_Ant1_2441



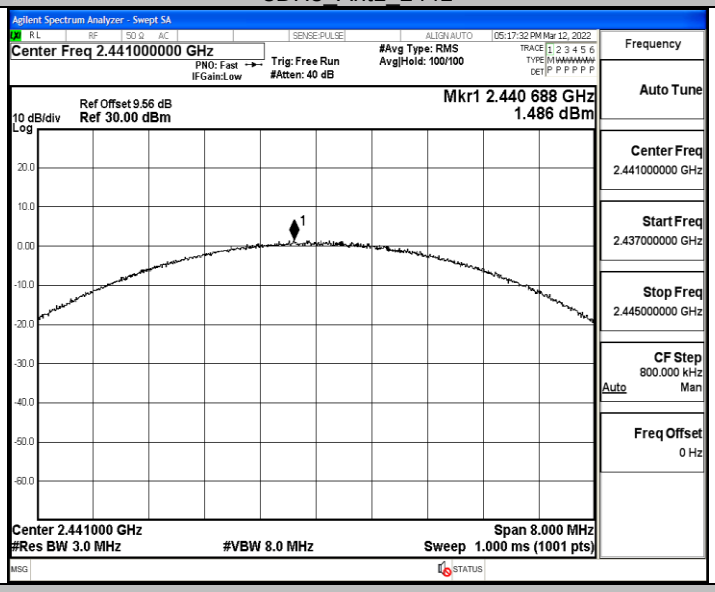

2DH5_Ant1_2480



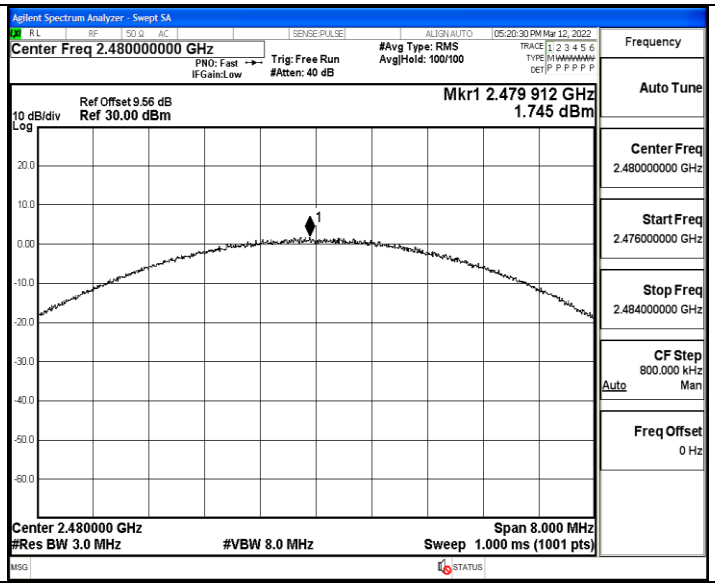

3DH5_Ant1_2402




3DH5_Ant1_2441




3DH5_Ant1_2480

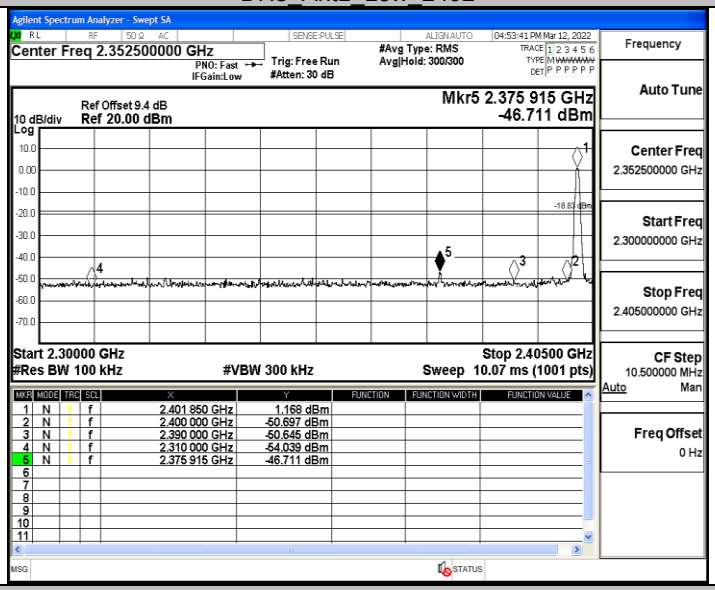

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
05:20:30 PM Mar 12, 2022
Ref Offset 9.56 dB
10 dB/div Ref 30.00 dBm
Log
Mkr1 2.479 912 GHz
1.745 dBm
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.476000000 GHz
Stop Freq
2.484000000 GHz
CF Step
800.000 kHz
Auto
Man
Freq Offset
0 Hz

## A.6 Band-edge for RF Conducted Emissions

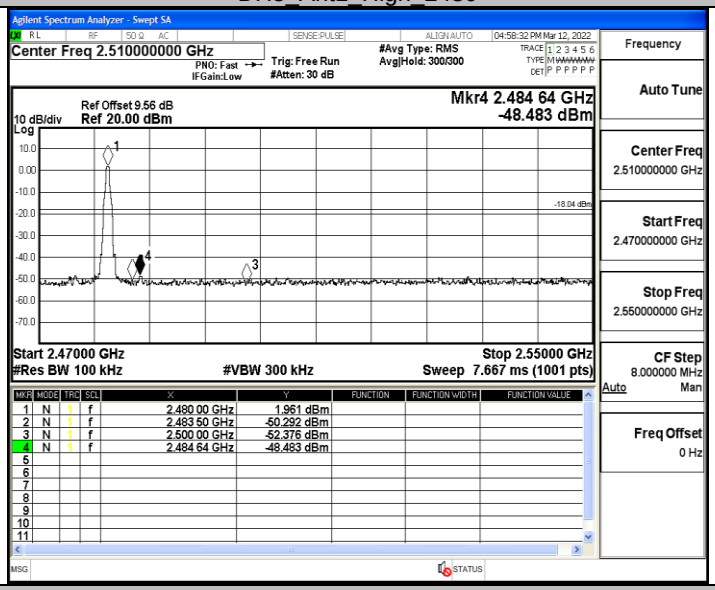
| TestMode | Antenna | ChName | Channel | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | Low | 2402 | 1.17 | -46.71 | ≤-18.83 | PASS |
| | | High | 2480 | 1.96 | -48.48 | ≤-18.04 | PASS |
| | | Low | Hop_2402 | -4.10 | -48.58 | ≤-24.1 | PASS |
| | | High | Hop_2480 | -2.39 | -47.58 | ≤-22.39 | PASS |
| 2DH5 | Ant1 | Low | 2402 | -3.96 | -49.64 | ≤-23.96 | PASS |
| | | High | 2480 | -2.78 | -48.87 | ≤-22.78 | PASS |
| | | Low | Hop_2402 | -4.36 | -49.73 | ≤-24.36 | PASS |
| | | High | Hop_2480 | -4.12 | -48.09 | ≤-24.12 | PASS |
| 3DH5 | Ant1 | Low | 2402 | -3.32 | -49.57 | ≤-23.32 | PASS |
| | | High | 2480 | -2.33 | -48.29 | ≤-22.33 | PASS |
| | | Low | Hop_2402 | -5.93 | -48.9 | ≤-25.93 | PASS |
| | | High | Hop_2480 | -2.11 | -48.61 | ≤-22.11 | PASS |

## Test Graph

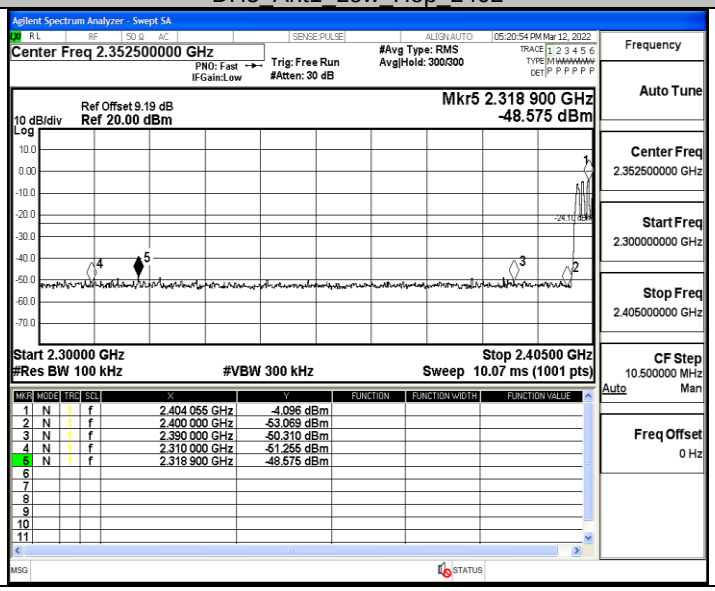
DH5_Ant1_Low_2402



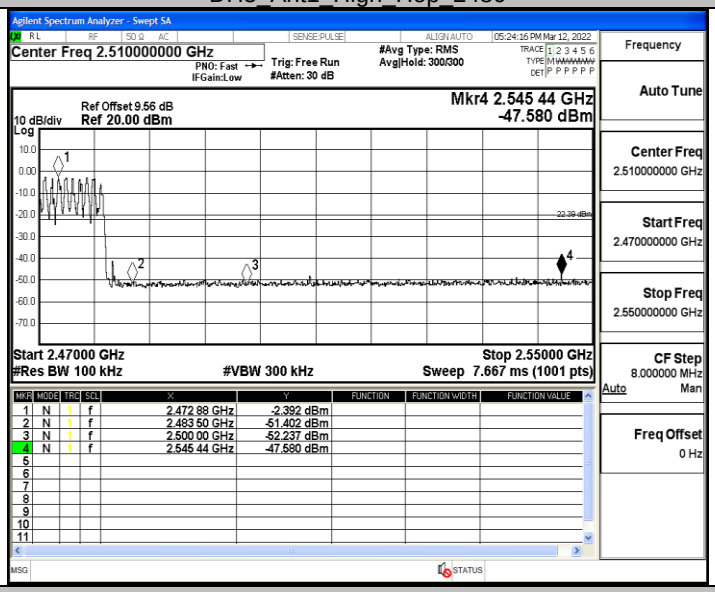

DH5_Ant1_High_2480



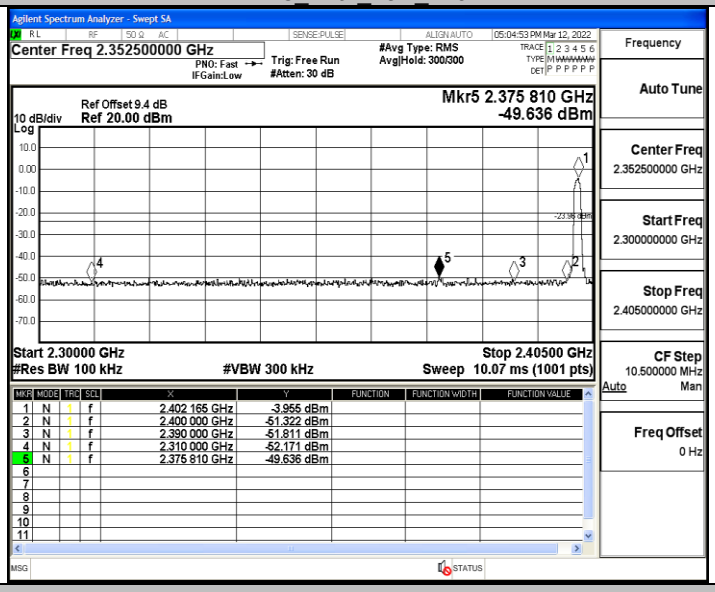

DH5_Ant1_Low_Hop_2402



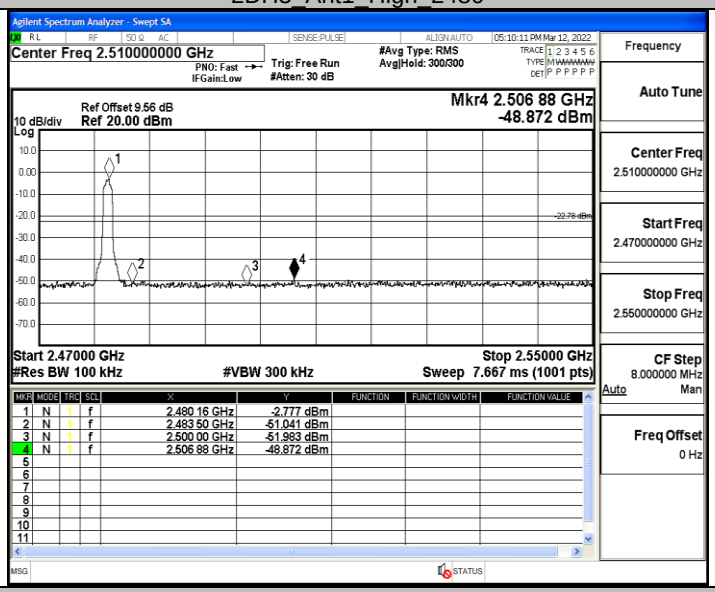
DH5_Ant1_High_Hop_2480



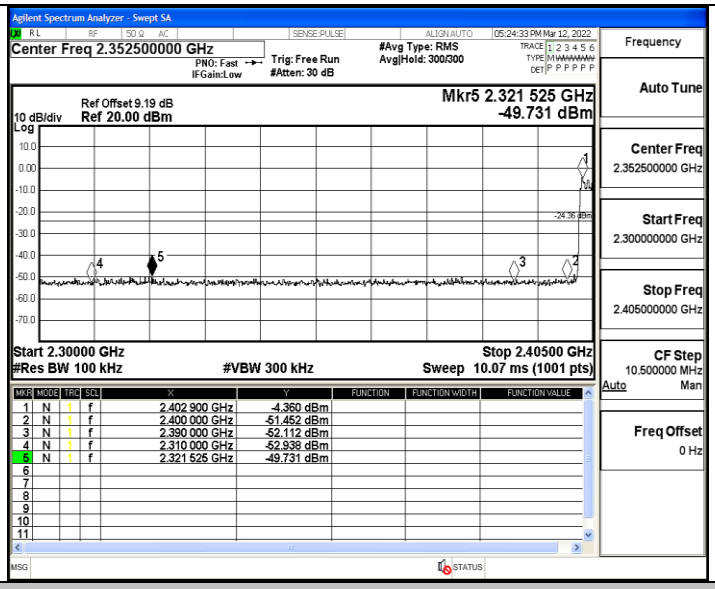

2DH5_Ant1_Low_2402



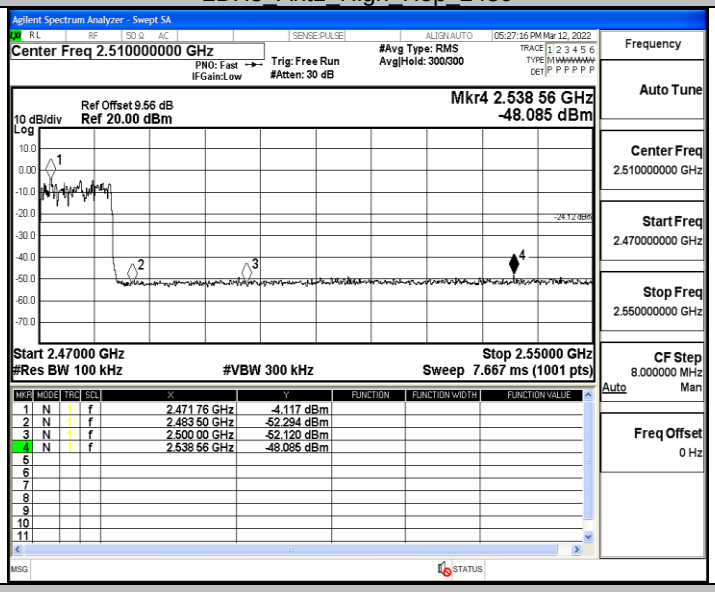

2DH5_Ant1_High_2480



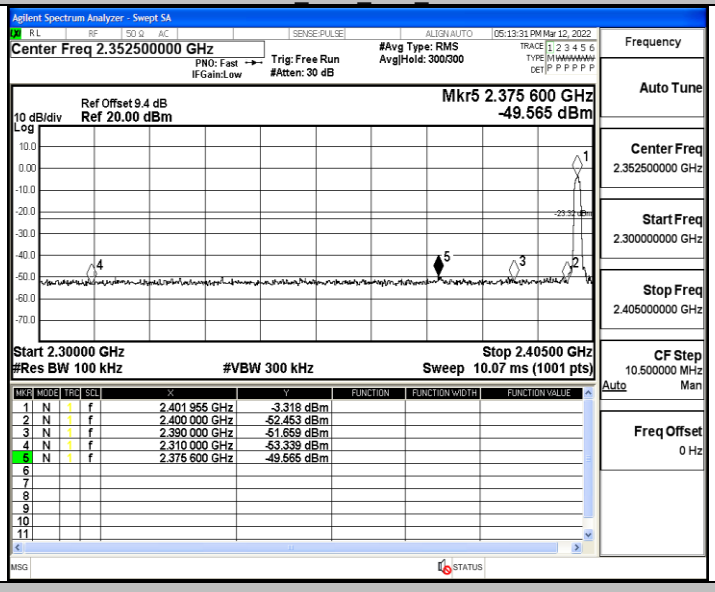

2DH5_Ant1_Low_Hop_2402



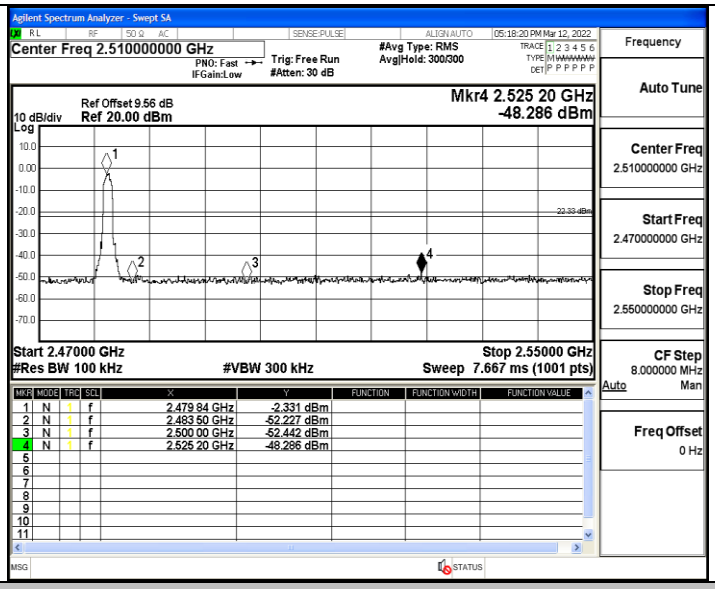

2DH5_Ant1_High_Hop_2480



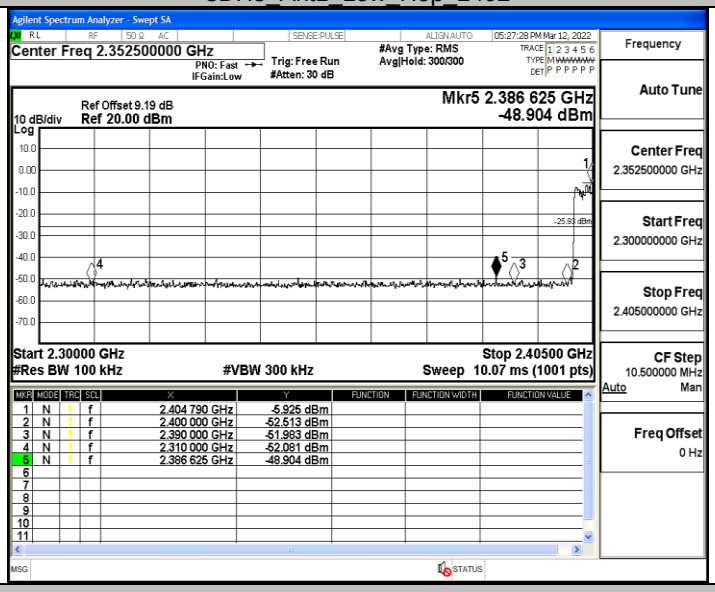

3DH5_Ant1_Low_2402



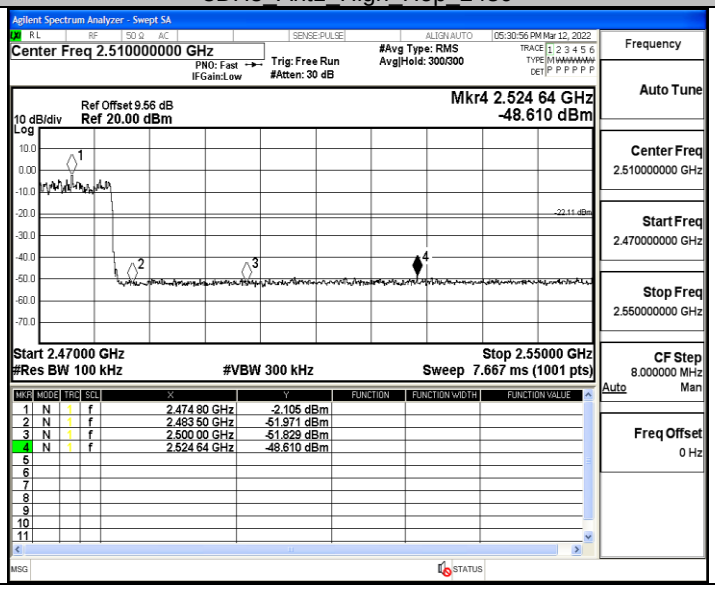

3DH5_Ant1_High_2480




3DH5_Ant1_Low_Hop_2402



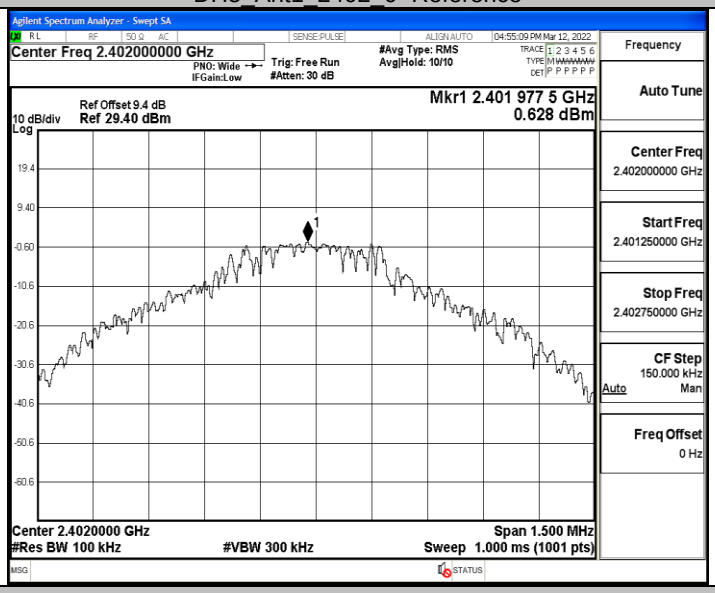

3DH5_Ant1_High_Hop_2480



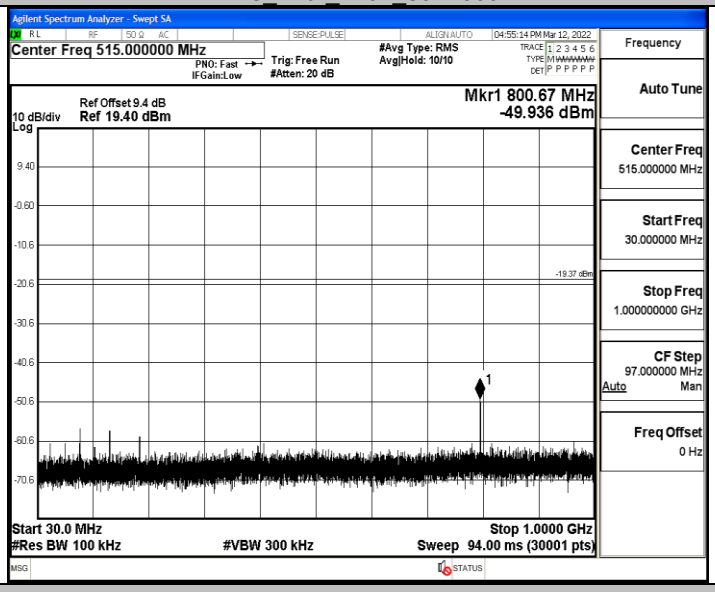
## A.7 RF Conducted Spurious Emissions

### Test Graph

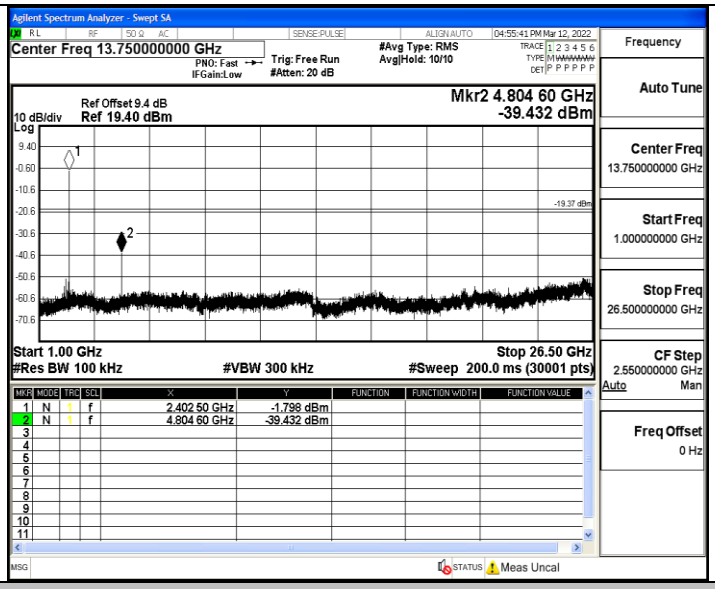
DH5_Ant1_2402_0~Reference



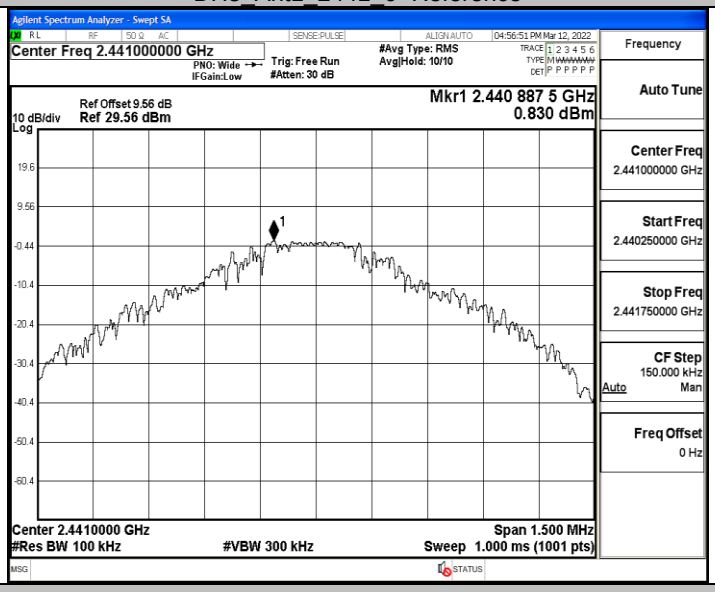

DH5_Ant1_2402_30~1000



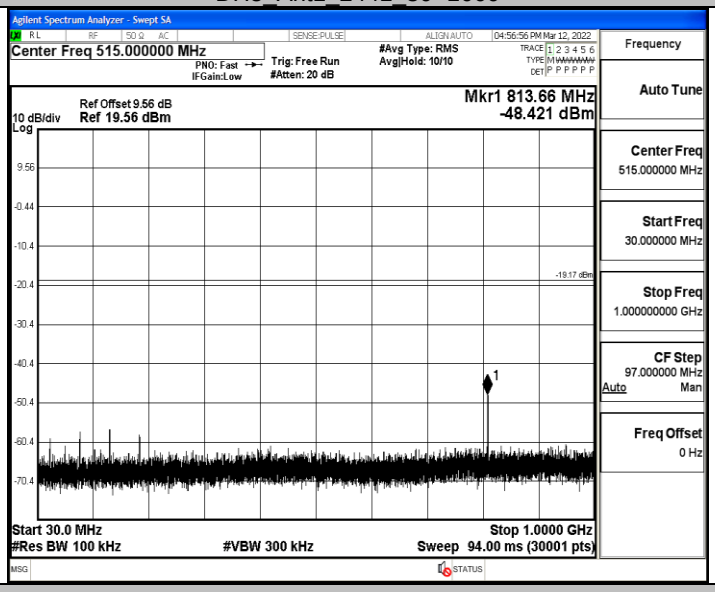

DH5_Ant1_2402_1000~26500



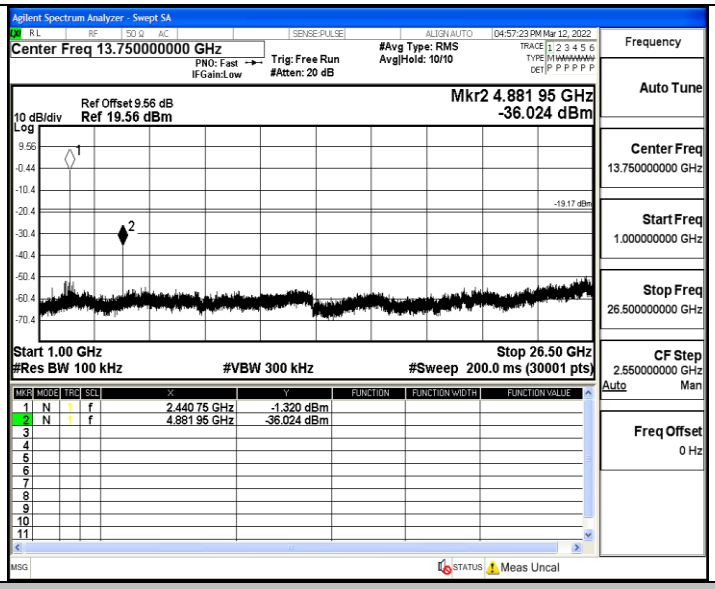

DH5_Ant1_2441_0~Reference



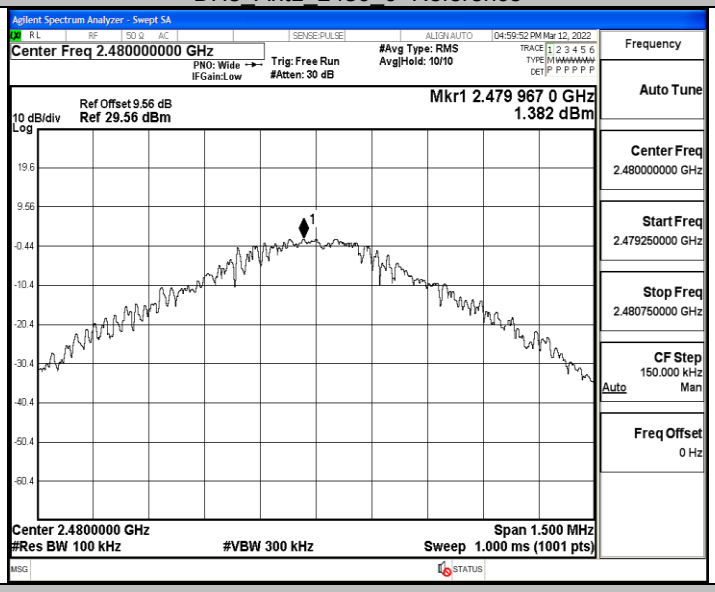

DH5_Ant1_2441_30~1000



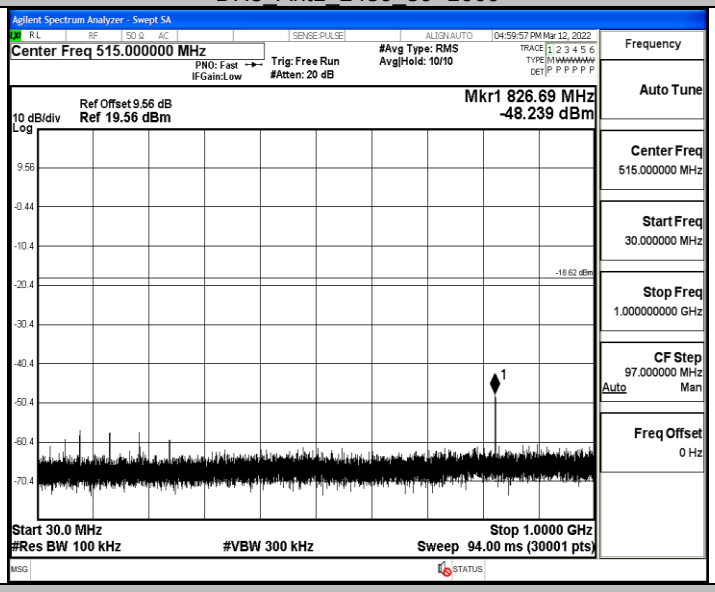

DH5_Ant1_2441_1000~26500



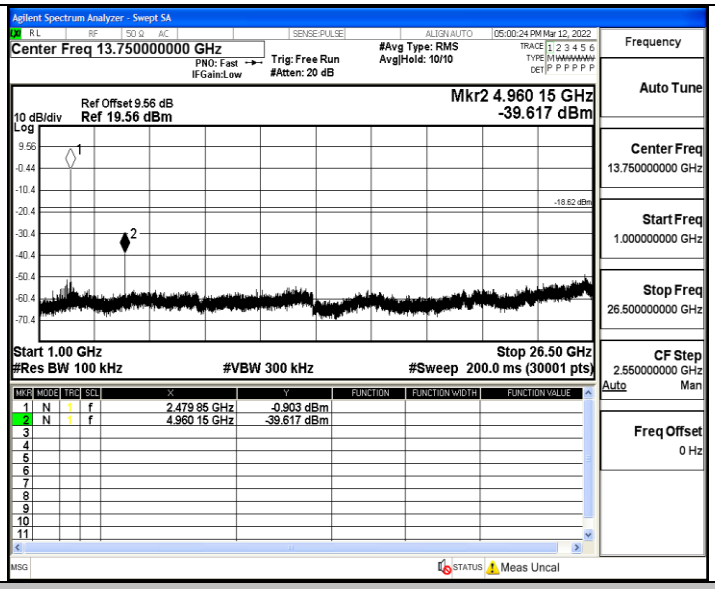

DH5_Ant1_2480_0~Reference



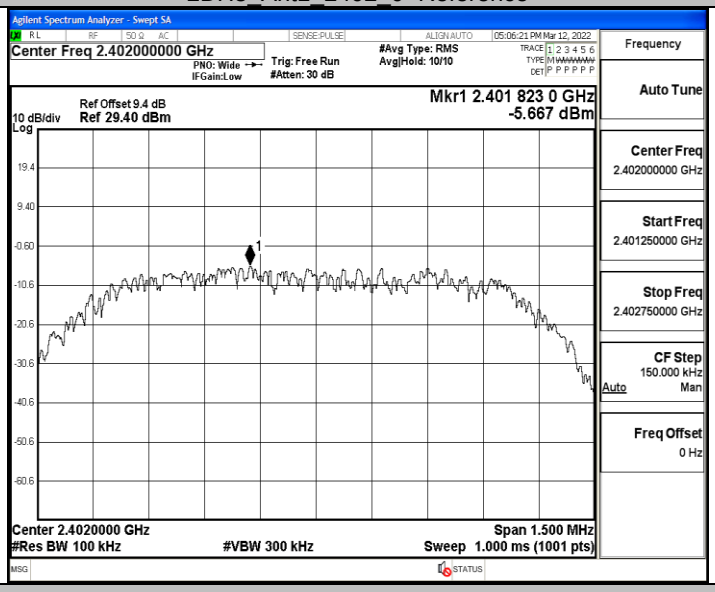

DH5_Ant1_2480_30~1000



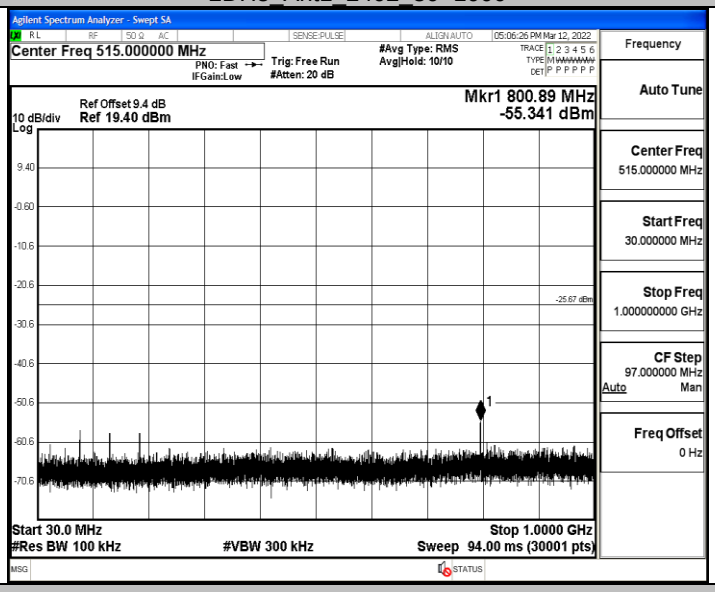

DH5_Ant1_2480_1000~26500



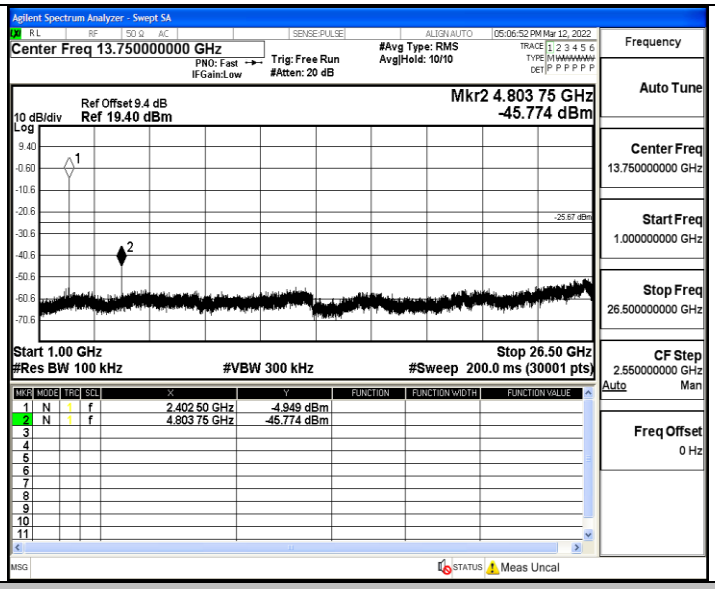

2DH5_Ant1_2402_0~Reference



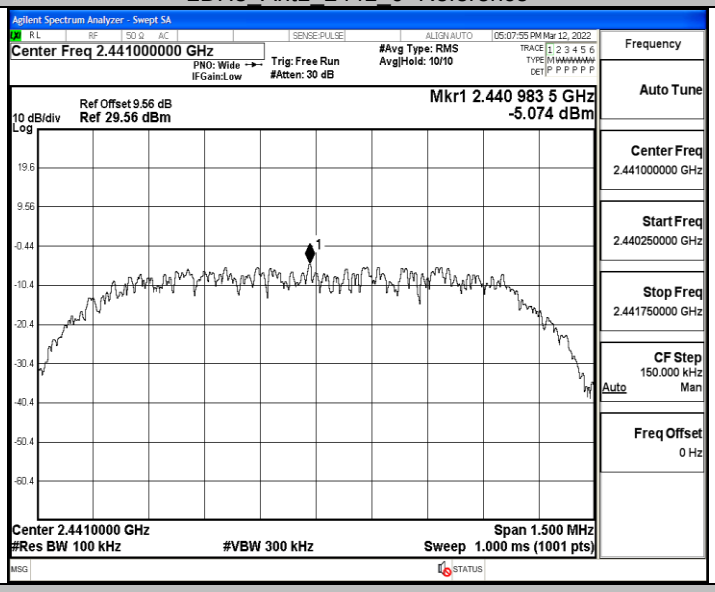

2DH5_Ant1_2402_30~1000



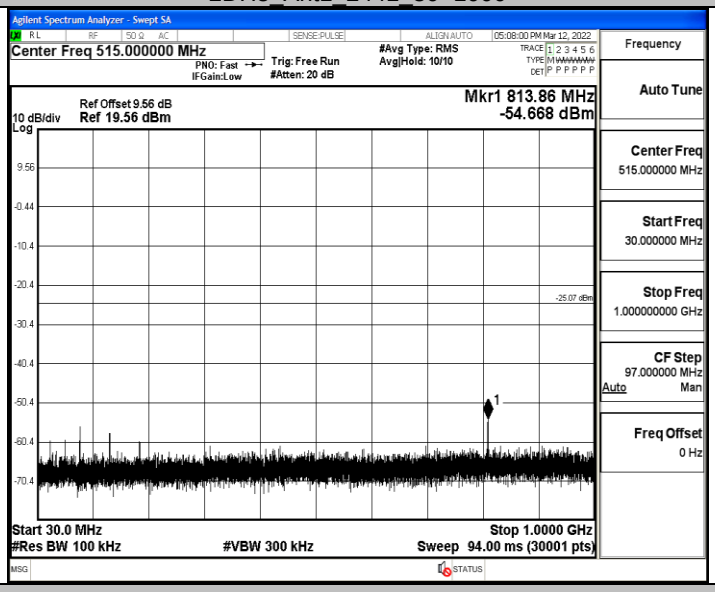

2DH5_Ant1_2402_1000~26500



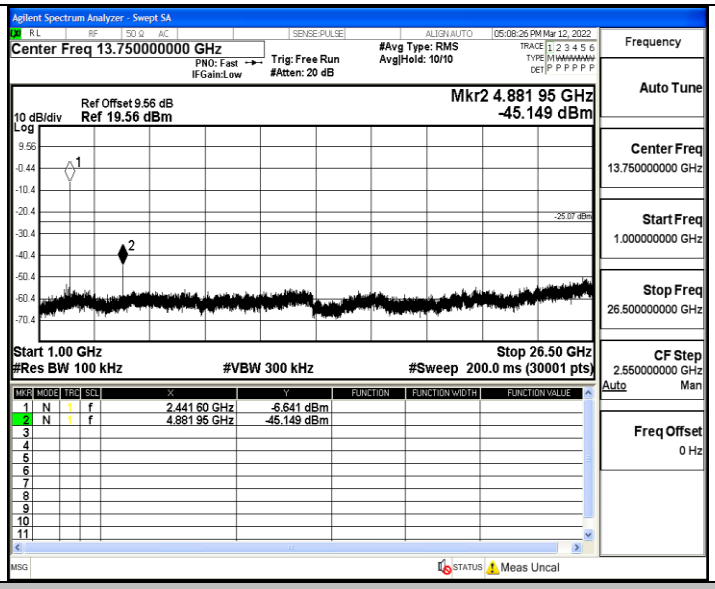

2DH5_Ant1_2441_0~Reference



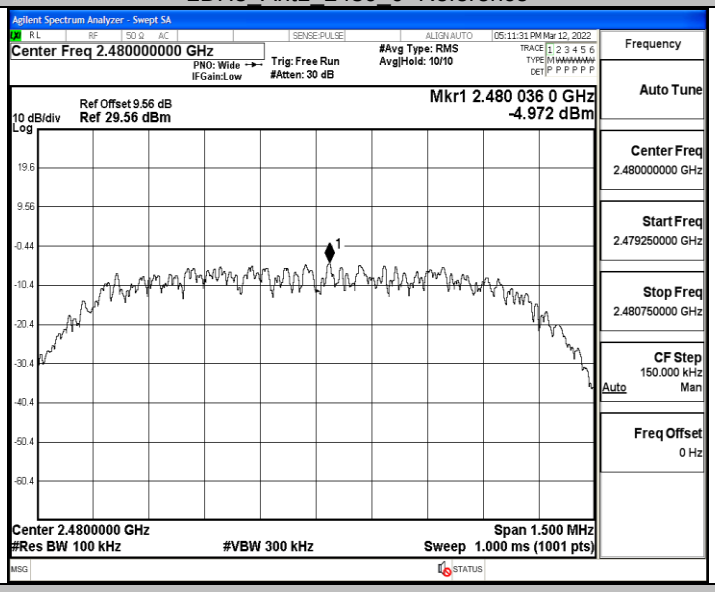

2DH5_Ant1_2441_30~1000



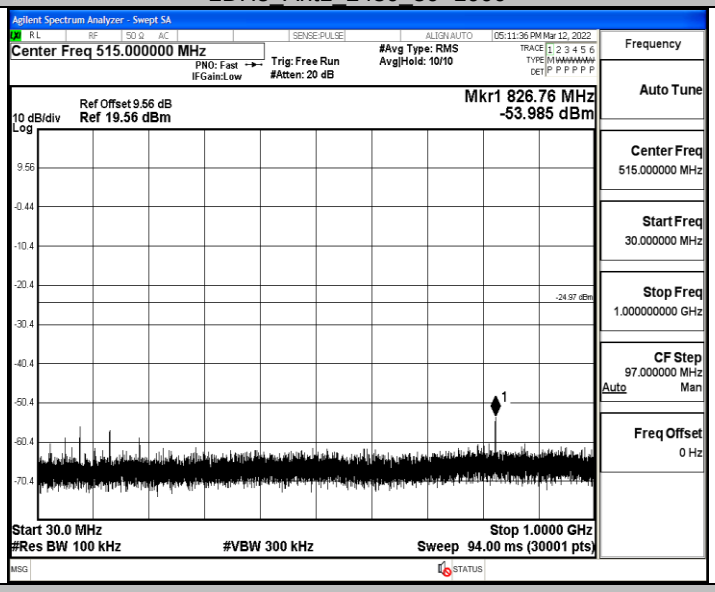

2DH5_Ant1_2441_1000~26500



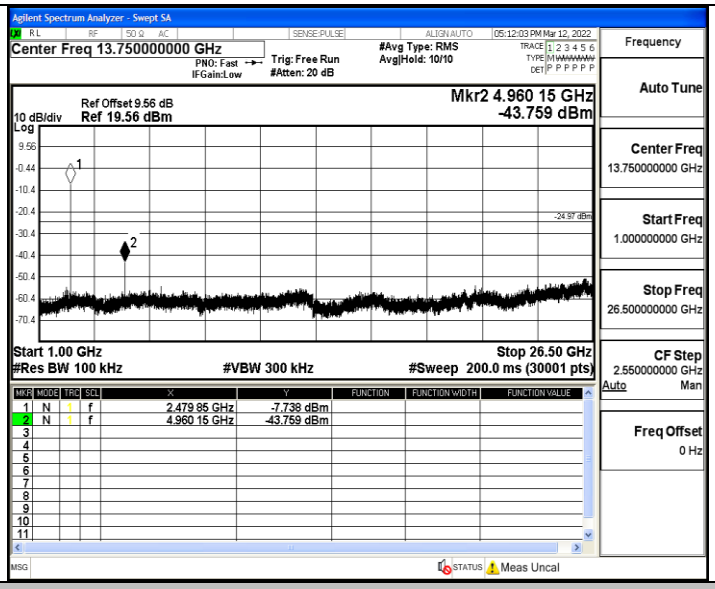

2DH5_Ant1_2480_0~Reference



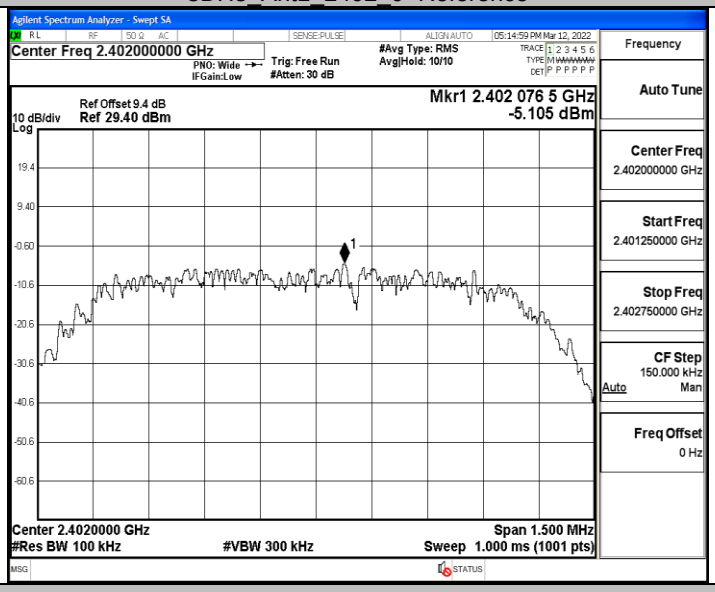

2DH5_Ant1_2480_30~1000



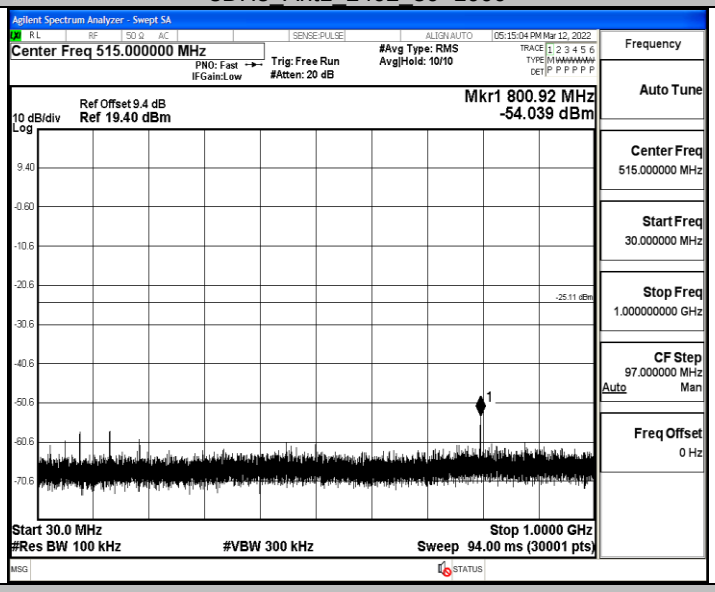

2DH5_Ant1_2480_1000~26500



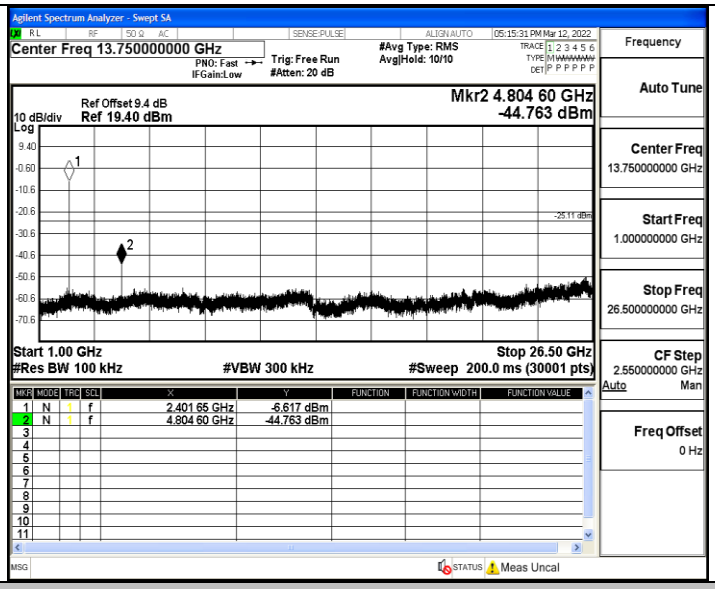

3DH5_Ant1_2402_0~Reference



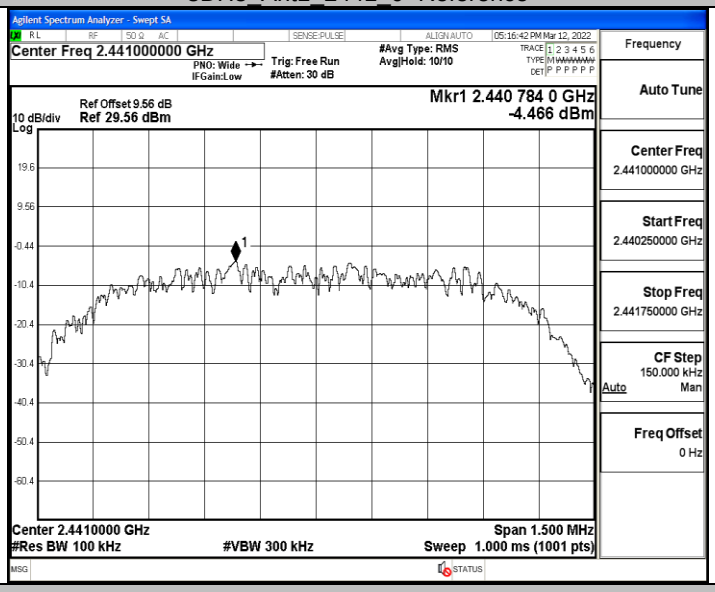

3DH5_Ant1_2402_30~1000



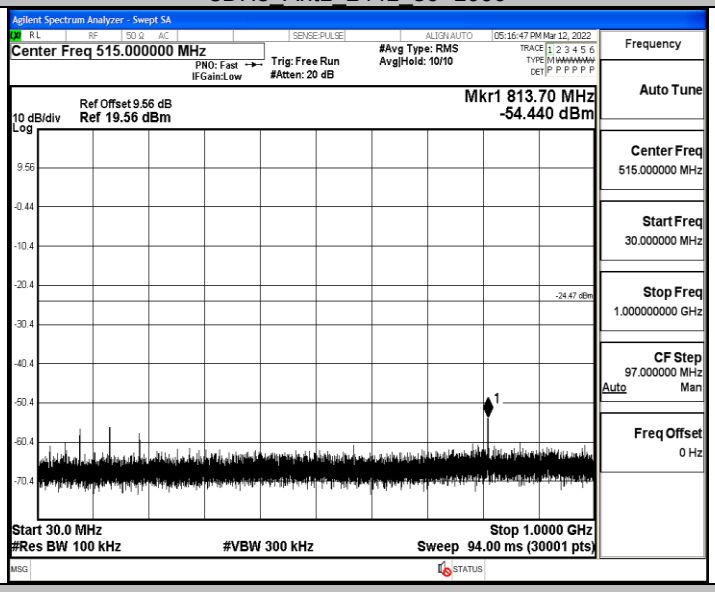

3DH5_Ant1_2402_1000~26500



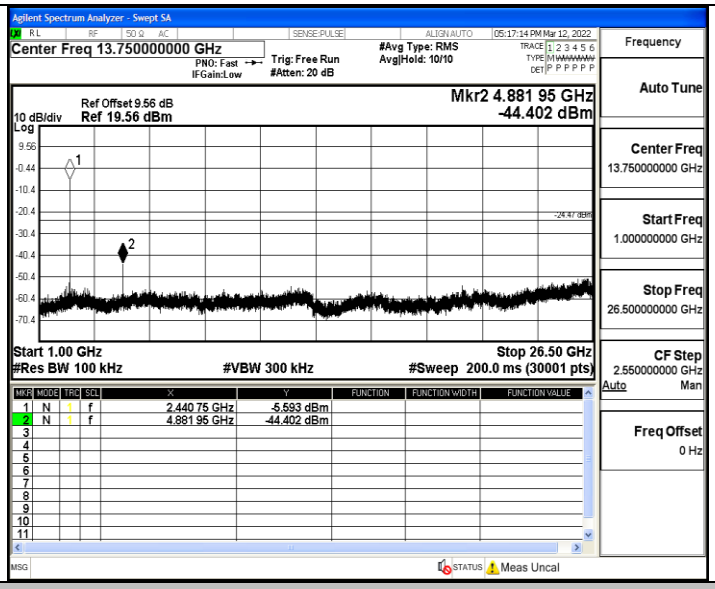

3DH5_Ant1_2441_0~Reference



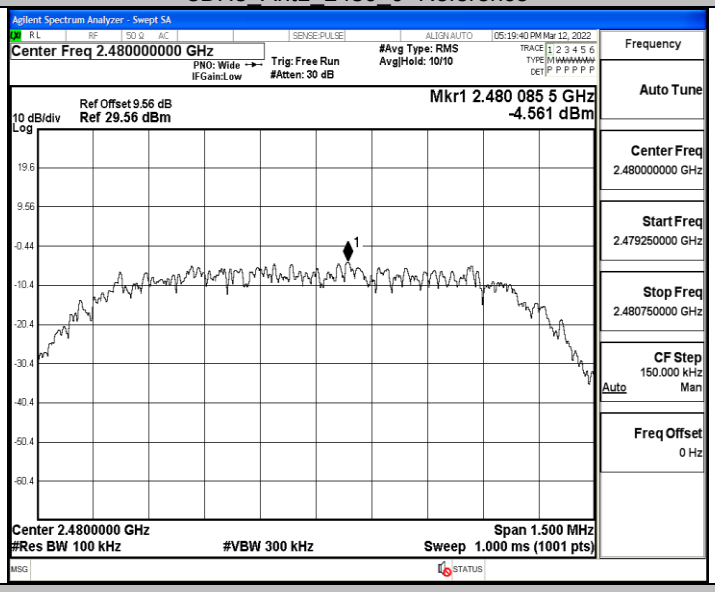

3DH5_Ant1_2441_30~1000



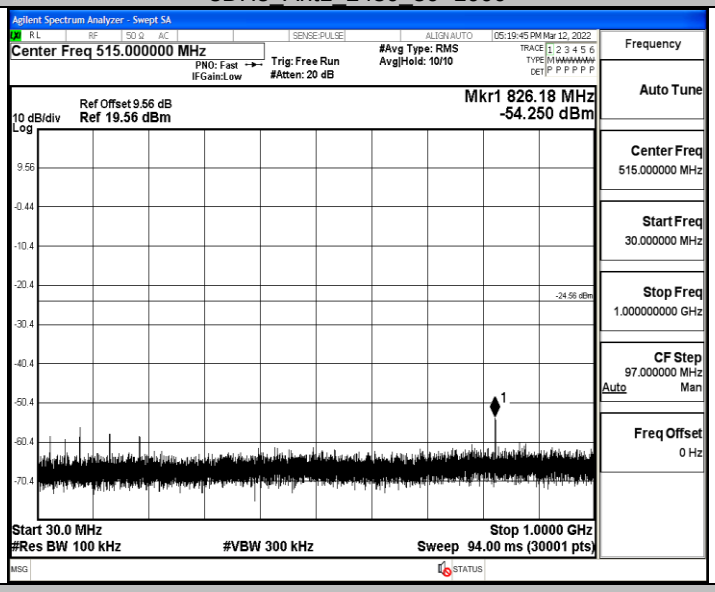

3DH5_Ant1_2441_1000~26500



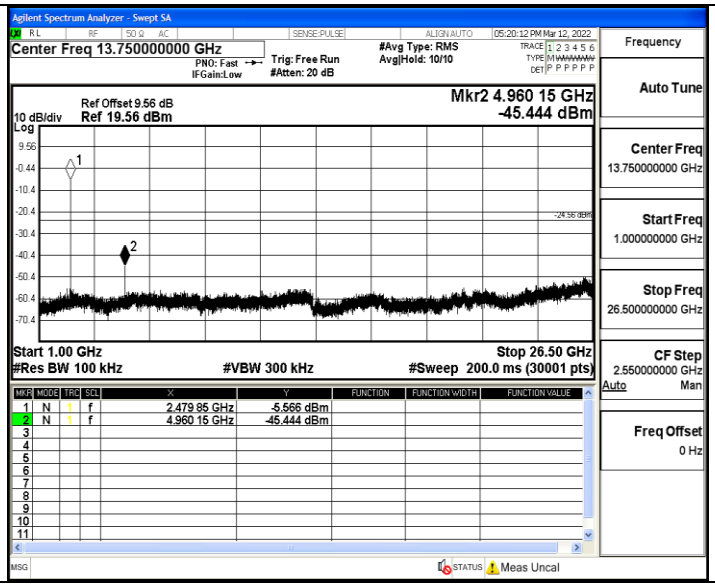

3DH5_Ant1_2480_0~Reference




3DH5_Ant1_2480_30~1000




3DH5_Ant1_2480_1000~26500




## A.8 Restrict-band band-edge measurements

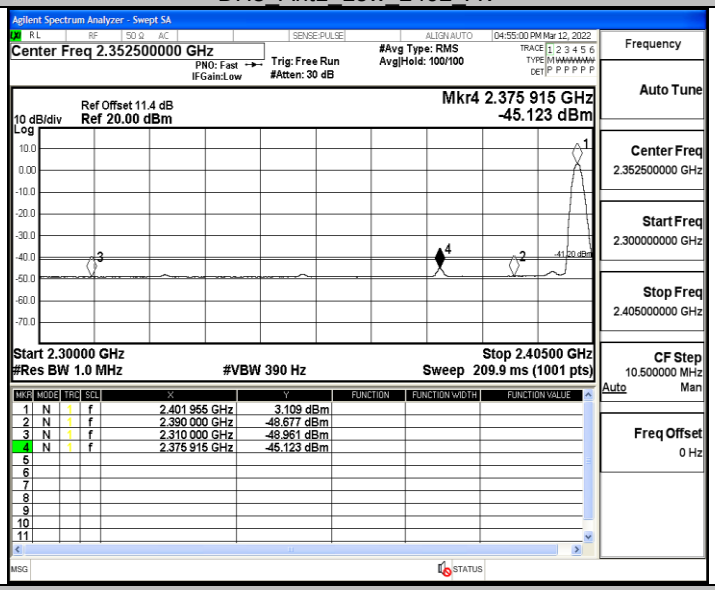
| TestMode | Antenna | ChName | Channel | Detector | Freq(MHz) | Result(dBm) | Limit(dBm) | Verdict |
|---|---|---|---|---|---|---|---|---|
| DH5 | Ant1 | Low | 2402 | AV | 2310.000 | -48.96 | ≤-41.20 | PASS |
| | | | | AV | 2375.915 | -45.12 | ≤-41.20 | PASS |
| | | | | AV | 2390.000 | -48.68 | ≤-41.20 | PASS |
| | | | | Peak | 2310.000 | -40.56 | ≤-21.20 | PASS |
| | | | | Peak | 2376.020 | -38.27 | ≤-21.20 | PASS |
| | | | | Peak | 2390.000 | -41.3 | ≤-21.20 | PASS |
| | | High | 2480 | AV | 2483.500 | -47.31 | ≤-41.20 | PASS |
| | | | | AV | 2484.720 | -46.09 | ≤-41.20 | PASS |
| | | | | AV | 2500.000 | -48.02 | ≤-41.20 | PASS |
| | | | | Peak | 2483.500 | -40.4 | ≤-21.20 | PASS |
| | | | | Peak | 2485.040 | -37.83 | ≤-21.20 | PASS |
| | | | | Peak | 2500.000 | -40.35 | ≤-21.20 | PASS |
| 2DH5 | Ant1 | Low | 2402 | AV | 2310.000 | -48.95 | ≤-41.20 | PASS |
| | | | | AV | 2375.810 | -47.24 | ≤-41.20 | PASS |
| | | | | AV | 2390.000 | -48.65 | ≤-41.20 | PASS |
| | | | | Peak | 2310.000 | -41.9 | ≤-21.20 | PASS |
| | | | | Peak | 2370.245 | -39.07 | ≤-21.20 | PASS |
| | | | | Peak | 2390.000 | -41.8 | ≤-21.20 | PASS |
| | | High | 2480 | AV | 2483.500 | -47.82 | ≤-41.20 | PASS |
| | | | | AV | 2484.560 | -47.45 | ≤-41.20 | PASS |
| | | | | AV | 2500.000 | -48.1 | ≤-41.20 | PASS |
| | | | | Peak | 2483.500 | -40.54 | ≤-21.20 | PASS |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Peak | 2491.280 | -38.57 | ≤-21.20 | PASS |
| | | | | Peak | 2500.000 | -40.7 | ≤-21.20 | PASS |
| 3DH5 | Ant1 | Low | 2402 | AV | 2310.000 | -49.07 | ≤-41.20 | PASS |
| | | | | AV | 2376.020 | -47.22 | ≤-41.20 | PASS |
| | | | | AV | 2390.000 | -48.74 | ≤-41.20 | PASS |
| | | | | Peak | 2310.000 | -41.82 | ≤-21.20 | PASS |
| | | | | Peak | 2383.790 | -38.29 | ≤-21.20 | PASS |
| | | | | Peak | 2390.000 | -42.36 | ≤-21.20 | PASS |
| | | High | 2480 | AV | 2483.500 | -47.76 | ≤-41.20 | PASS |
| | | | | AV | 2484.720 | -47.37 | ≤-41.20 | PASS |
| | | | | AV | 2500.000 | -47.96 | ≤-41.20 | PASS |
| | | | | Peak | 2483.500 | -41.34 | ≤-21.20 | PASS |
| | | | | Peak | 2484.480 | -38.95 | ≤-21.20 | PASS |
| | | | | Peak | 2500.000 | -41.88 | ≤-21.20 | PASS |

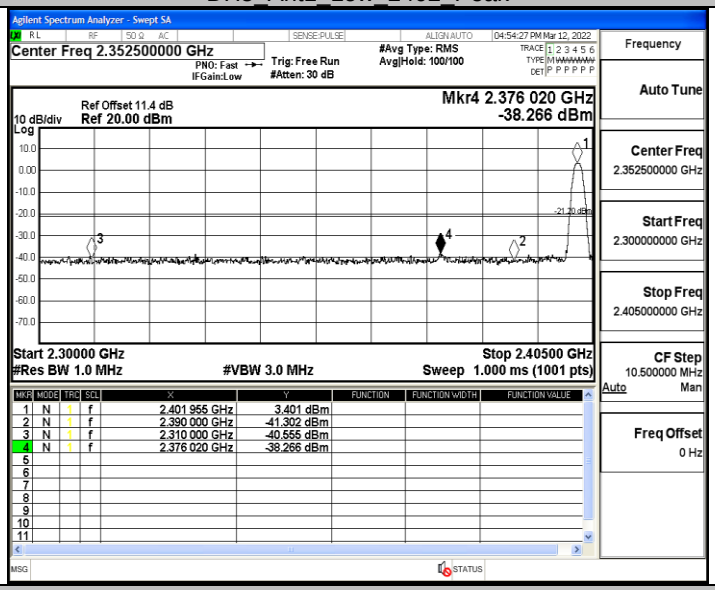
1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

## Test Graphs

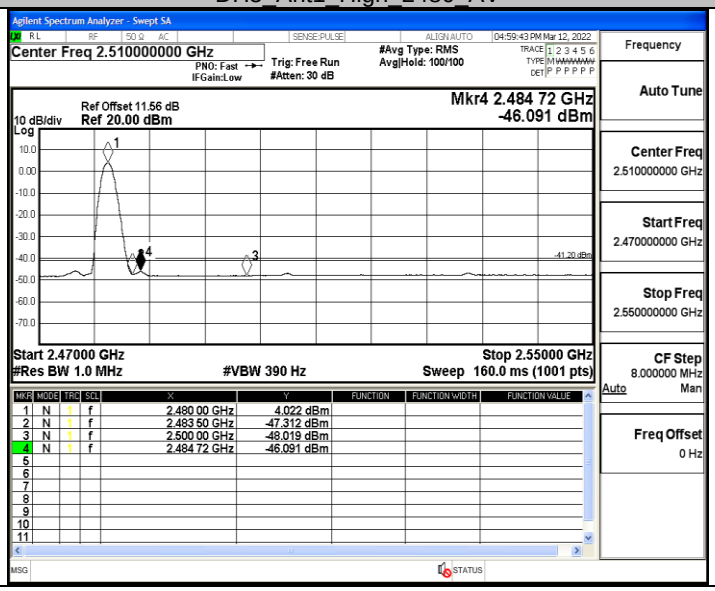
DH5_Ant1_Low_2402_AV



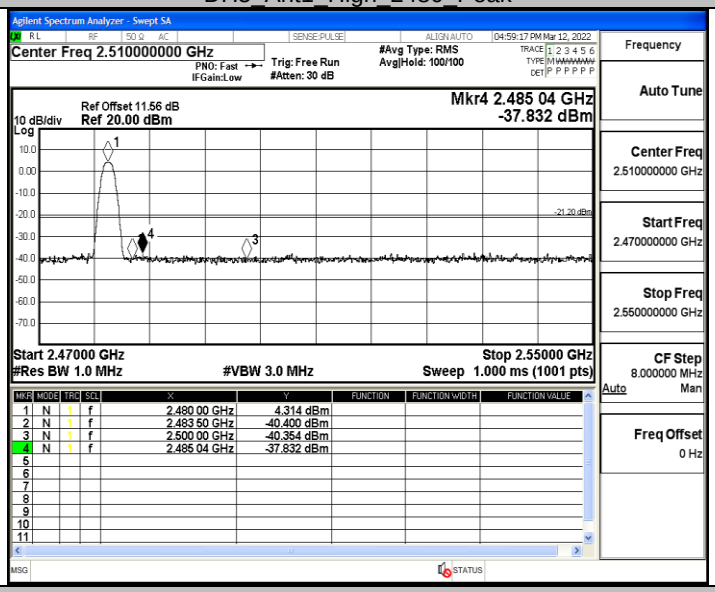

DH5_Ant1_Low_2402_Peak



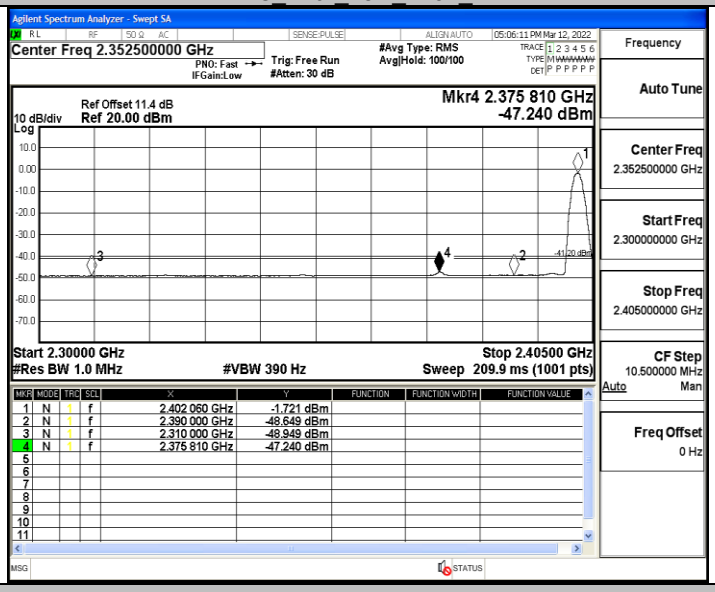

DH5_Ant1_High_2480_AV



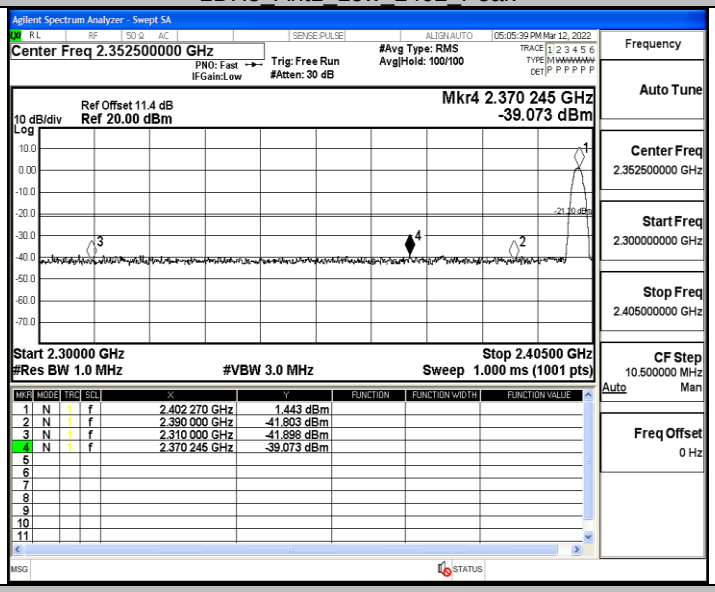
DH5_Ant1_High_2480_Peak



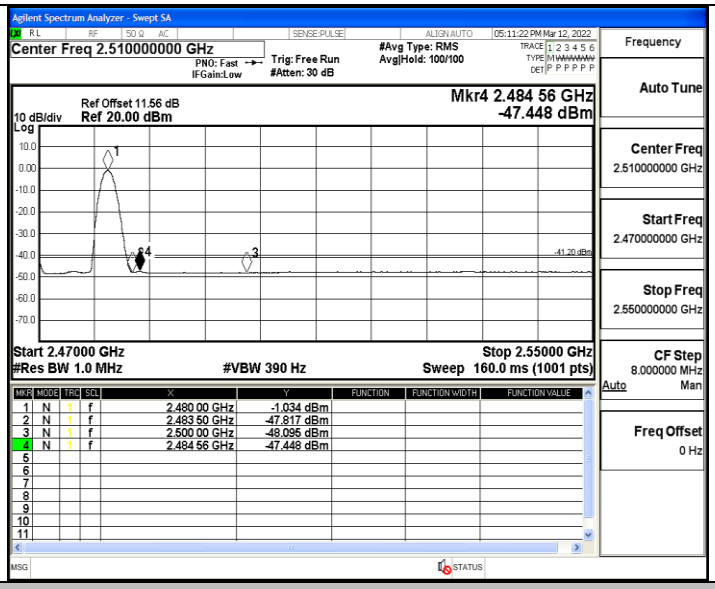

2DH5_Ant1_Low_2402_AV



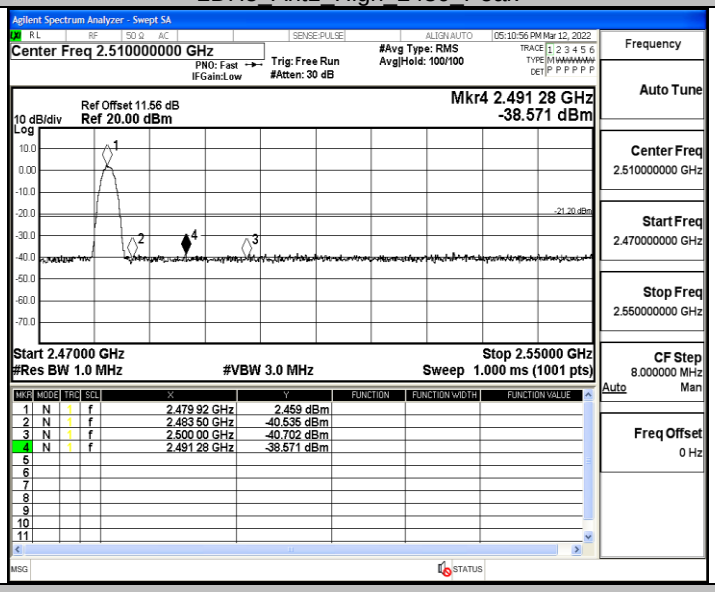

2DH5_Ant1_Low_2402_Peak



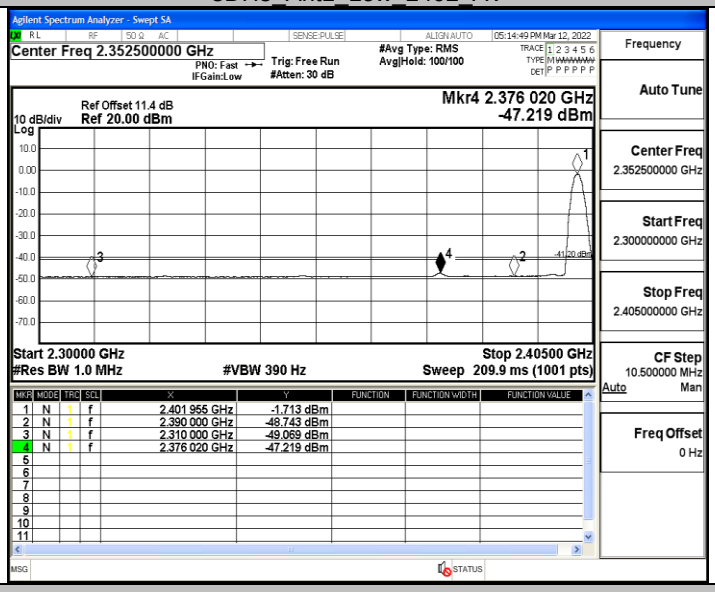

2DH5_Ant1_High_2480_AV



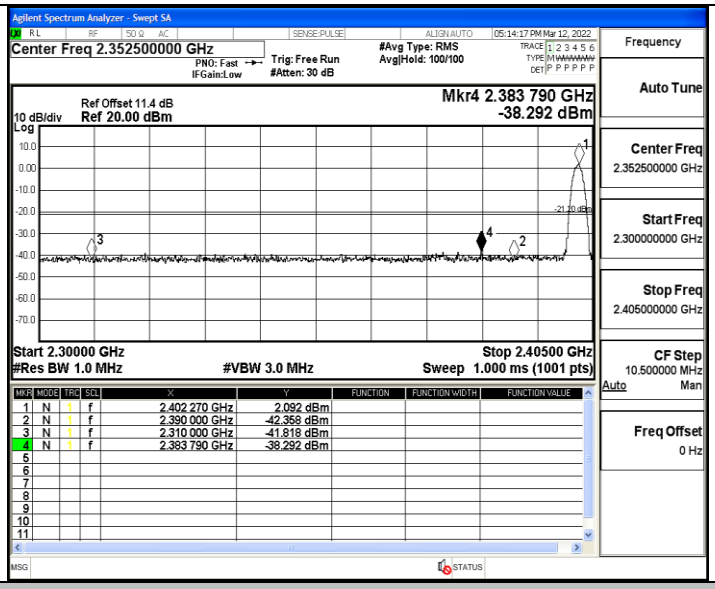

2DH5_Ant1_High_2480_Peak



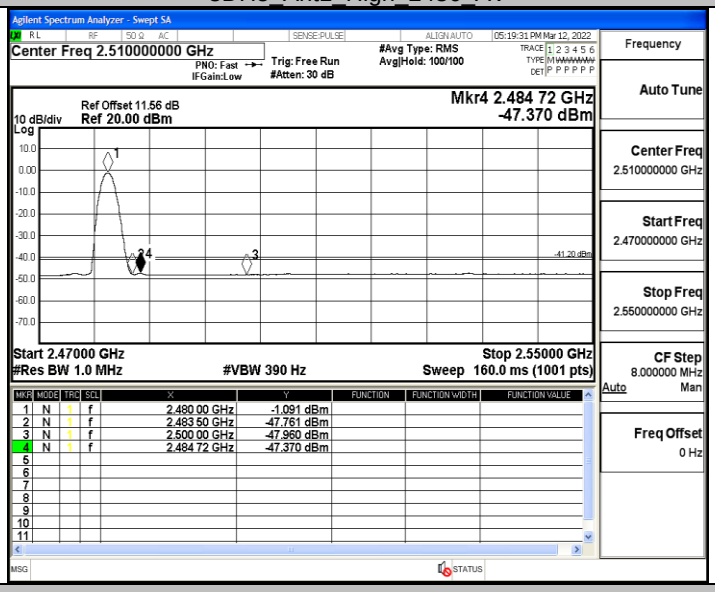

3DH5_Ant1_Low_2402_AV




3DH5_Ant1_Low_2402_Peak




3DH5_Ant1_High_2480_AV




3DH5_Ant1_High_2480_Peak